1994

Structural Equation Modeling Analysis of Risk Factors for the Development of Eating Disorder Symptoms in Adolescents.

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STRUCTURAL EQUATION MODELING ANALYSIS OF RISK FACTORS FOR THE DEVELOPMENT OF EATING DISORDER SYMPTOMS IN ADOLESCENTS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by
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B.S., Louisiana State University, 1987
M.A., Louisiana State University, 1991
December 1994

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ABSTRACT

Risk factors which have been shown to influence the development of body dissatisfaction and eating disturbance in adolescents include depressed mood, low self-esteem, a history of teasing about physical appearance, social and parental pressure to be thin, pubertal timing, and actual body weight or body mass index. In the present study, an etiological model was proposed with these risk factors as predictors of the presence of eating disorder symptoms; this association was hypothesized to be mediated by dissatisfaction with body shape and weight. Structural equation modeling was used to test this theoretical model within a total sample of 345 adolescent females. Of the risk factors examined, all were significantly correlated with body dissatisfaction and eating disturbance except pubertal timing (i.e., early or late onset of menarche). Depressed mood, low self-esteem, social and parental pressure for thinness, and body mass index were found to be significant risk factors for the presence of body dissatisfaction. Depressed mood and low self-esteem were also found to be significant direct risk factors for eating disturbance; this relationship was not mediated by body dissatisfaction. In an initial sample of 172 subjects, the risk factors examined accounted for 40

percent of the variance in body dissatisfaction, which itself explained 64 percent of the variance in eating disturbance. The model was cross-validated with data from an additional 173 subjects; within this sample the risk factors accounted for 41 percent of the variance in body dissatisfaction; 67 percent of the variance in eating disturbance was explained. The results of this investigation were consistent with other recent studies of risk factors for eating disturbance. The major new finding of this study was that the direct association of depressed mood and low self-esteem with eating disorder symptoms was stronger than has previously been reported.

INTRODUCTION

Clinical Description of the Eating Disorders

The most common types of eating disorders found in adolescents and adults are anorexia nervosa and bulimia nervosa. Anorexia nervosa was first recognized as a psychiatric syndrome in 1868 when it was described by Sir William Gull. Its central feature is an intense fear of "fatness" which motivates the anorexic toward extreme methods for weight loss despite being very thin. In the fourth edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV; American Psychiatric Association, 1994), anorexia nervosa is defined as a disorder characterized by a refusal to maintain minimum normal body weight (15 percent or more below normal weight for age and height). In addition, anorexics must exhibit an intense fear of gaining weight, disturbance in body image, and amenorrhea. Anorexics may or may not engage in binge eating. Bulimia nervosa is an eating disorder characterized by frequent episodes of uncontrolled binge eating, followed by the use of compensatory behaviors to control weight. These behaviors include both "purgative" techniques (self-induced vomiting or misuse of laxatives, diuretics, or enemas) and "non-purgative" compensatory behaviors (excessive exercise

and strict dieting or fasting). Like anorexia nervosa, persons diagnosed with bulimia nervosa are thought to engage in these behaviors because of body image disturbances and an intense fear of weight gain. The DSM-IV diagnostic criteria require an individual to engage in an average of two binge eating episodes per week for a minimum of three months and to engage regularly in one or more purgative methods to prevent weight gain.

Prevalence estimates of eating disorders have varied substantially. Most of this variability between studies can be attributed to differences in methodology (e.g., disagreements about the defining characteristics of the disorders, self-report instruments vs. interview methods for diagnosis).

Studies consistently have shown that eating disorders are most prevalent in young females, and are especially common among women who are scrutinized for physical fitness such as ballet dancers (Garner, Garfinkel, Rockert, & Olmsted, 1987) and athletes (Rosen & Hough, 1988). Bulimia nervosa is more common than anorexia nervosa. In interview-based studies using DSM-III-R or equivalent definitions, prevalence rates for anorexia nervosa have generally been between 0.7 percent and 2.1 percent, while those for bulimia nervosa are between 1 percent and 4.5 percent of

adolescent girls and women in the general population (Fairburn & Beglin, 1990; Hsu, 1990).

Adolescence appears to be a "critical period" for the development of eating disturbance (Bruch, 1973; Striegel-Moore, Silberstein, & Rodin, 1986; Agras & Kirkley, 1986) and body image problems (Cash, Winstead, & Janda, 1986) among females. Whereas prepubertal girls do not report feeling fat (Striegel-Moore, Nicholson, & Tamborlane, 1992), adolescent girls experience marked increases in body dissatisfaction, and feeling fat is their primary concern about physical appearance (Gralen, Levine, Smolak, & Murnen, 1990). Biological changes associated with puberty, heterosocial demands, and increased achievement and other expectations are challenges to the adolescent which may influence the development of problems during this time. In particular, current sociocultural demands that women be "both smart and beautiful" (Selvini-Palazzoli, 1971) have been implicated in the rise of eating disorders (Levine & Smolak, 1992).

Body Image Disturbances in Eating Disorders

The construct of "body image" has been used extensively in widely varying fields of research. Eating disorders have been associated with the physical appearance aspect of body image, which Slade

(1994) defined as a "loose mental representation of the body's shape, form, and size which is influenced by a variety of historical, cultural, and social, individual, and biological factors" (p. 502). The body image construct has been divided into three factors: a perceptual component (or size perception accuracy); a subjective component, which includes body dissatisfaction; and a behavioral component, which focuses on an individual's avoidance of situations which cause physical appearance-related discomfort.

Hilde Bruch (1962) was the first to associate disturbance of body image with anorexia nervosa. She considered it to be necessary for the development of anorexia nervosa, and also to be prognostic of recovery. Slade and Russell (1973) provided empirical support for Bruch's theory with the finding that anorexics overestimated the size of their bodies relative to control subjects. Several other researchers replicated Slade and Russell's (1973) results; in fact, by 1985 over 80 studies had been published in this area (Slade, 1985). In the 1980's, researchers found that persons diagnosed with bulimia nervosa also overestimated body size (Thompson, 1990).

In light of these research findings, body image disturbance or overconcern with body size and shape was included in the DSM-IV diagnostic criteria for

both anorexia and bulimia nervosa. For the diagnosis of anorexia nervosa, the individual must exhibit a "disturbance in the way one's body weight, size, or shape is experienced" (p. 545), operationalized as denial of the seriousness of low body weight, or undue influence of body weight and shape on one's self-evaluation. Similarly, in the criteria for bulimia nervosa, body image disturbance is indicated when an individual's self-evaluation is unduly influenced by body shape and weight (p. 550).

Results of studies examining the perceptual aspect of body image (i.e., size perception accuracy) have been equivocal. These studies have generally used five different techniques for determining perceptual distortion: 1) image marking procedures; 2) analogue scales; 3) optical distortion techniques; 4) silhouette card sorting; and 5) kinesthetic procedures (e.g., subjects are blindfolded and instructed to estimate their body width by moving a pair of calipers). Many studies have found greater body size overestimation in anorexics and bulimics as compared to controls (for a review, see Slade, 1985). However, as reviewed by Hsu and Sobkiewicz (1991), other studies have provided conflicting evidence. Of the research reviewed for both anorexia and bulimia nervosa, across perceptual methods, 14 studies found

that clinical subjects overestimated their body size to a greater degree than normal controls. However, 12 studies found no differences between the two groups. Hsu and Sobkiewicz concluded that for both disorders, some anorexics and bulimics overestimate and others do not. In their view, size overestimation should not be considered characteristic of all or even most persons with an eating disorder. Furthermore, size overestimation has been found to differ according to the instructional protocol used. For example, in a study by Thompson and Dolce (1989), subjects overestimated their body size more when asked how they "felt" they looked than when asked how they "thought" they looked.

Research investigating the subjective component of body image has provided more consistent results. The majority of studies have indicated that eating disordered subjects are more dissatisfied with their bodies than are normal controls. For example, Post and Crowther (1987) found that bulimic adolescents had a more negative body image than controls. Brown, Cash, and Lewis (1989) found similar results. In another study, Bunnell, Cooper, Hertz, and Shenker (1992) also found that bulimic adolescents (ages 13-17) had significantly more body shape concerns than normal subjects.

Since the mid-1980's, researchers have consistently found that body image disturbance is not restricted to eating disordered populations. Both size perception inaccuracy and body dissatisfaction have been demonstrated in diverse populations, and in virtually all age groups. For example, Cash et al. (1986) found high levels of dissatisfaction with body image, especially in females, in a survey of over 30,000 individuals. Also, Thompson (1986) found that about 95 percent of the women he studied overestimated the size of their bodies. In fact, women's concern with body image has become so prevalent that Rodin and colleagues have called it a "normative discontent" which can be considered a part of the normal female experience (Rodin, Silberstein, & Striegel-Moore, 1985).

Studies of normal adolescent girls have also found high rates of body dissatisfaction. Crisp (1984) found that 26 percent of 11-12 year-olds and 39 percent of 12-13 year-olds had been concerned about their weight at some time since age 11. By age 14, 42 percent had at some time felt fat or were very concerned about body weight. Davies and Furnham (1986a) found that over 40 percent of girls aged 12-18 considered themselves overweight and wanted to lose weight, although less than four percent were

objectively overweight. Davies and Furnham (1986a) reported that girls were showing more concern about their weight at younger ages. For example, 63 percent of 12 year-old girls reported wanting to lose weight, as compared to eight percent in Nylander's 1971 study. In another study of normal adolescent girls aged 11-18 years, Davies and Furnham (1986b) found that body satisfaction was high (87.5%) only in girls who perceived themselves to be underweight.

Since body image concerns are found in both eating disordered and normal female populations, body dissatisfaction and weight-related concerns alone cannot be sufficient to produce clinically significant eating problems. If they were, virtually every adolescent girl should develop an eating disorder. However, while weight and body image concerns appear to be common to eating disordered and non-eating disordered females, psychological difficulties seem more exclusively linked to clinical eating disturbances. Such findings have led to the elaboration of a "two-component" model of eating disorder development (Garner, Olmsted, Polivy, & Garfinkel, 1984). This model suggests that eating disorders occur in the presence of <u>both</u> 1)intense concerns with weight and body dissatisfaction; and 2) other psychopathology. Psychological variables which

have been hypothesized to interact with body image disturbance to produce eating disorders include mood disturbance (Steiger, Leung, Ross, & Gulko, 1992) and low self-esteem (Rosen, Tacy, & Howell, 1990). Other variables which have been linked to body image and eating disturbances include sociocultural pressure to be thin (Striegel-Moore et al., 1986), a history of physical appearance-related teasing (Thompson, 1990), and developmental factors such as early onset of menarche (Attie & Brooks-Gunn, 1989). As would be expected, an individual's body weight is thought to interact with these psychological, sociocultural and developmental factors to produce body dissatisfaction and eating disturbances. The research relevant to each of these variables is presented below.

Depression. There is a wealth of data associating body image disturbance with depression. For example, Marsella, Shizuru, Brennan, and Kameoka (1981) found that depressed college students were more dissatisfied with their bodies than were nondepressed students. These results were replicated by Noles, Cash, and Winstead (1985), who found that depressed subjects rated themselves as less satisfied with their bodies and less physically attractive than did nondepressed subjects. However, objective ratings (obtained by videotaping each subject) of

attractiveness did not differ between groups. In the Noles et al. study (1985), subjects with an average body image did not differ in depression from those with a positive body image; only those subjects with negative body image exhibited more depressive symptoms. Thompson and Psaltis (1988) also found a strong negative association between evaluation of physical appearance and depression--individuals with poorer body image exhibited a higher level of depression.

Depression has been found to co-occur with eating disturbances in females to such a great extent that some researchers have proposed that eating disorders are biological variants of affective disorders. Although this affective variant theory has not received extensive empirical support (e.g., Strober & Katz, 1987; Hinz & Williamson, 1987), it is clear that depression frequently co-exists with eating problems (e.g., Marcus & Wing, 1987; Prather & Williamson, 1988).

In studies conducted with adolescents, depression has been associated with both body image problems and eating disturbance. Gross and Rosen (1988) found that scores on a self-report measure of depression were significant predictors of eating disturbance in girls in grades 9-12, and that bulimics reported

significantly more depression than did normal controls. Rosen, Gross, and Vara (1987), also studied high school girls. They found that depression was a predictor of dietary restraint. Normal weight female adolescents attempting to lose weight had Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) scores approaching clinical levels ($\geq$ 10); however, they were within the normal weight range (i.e., $\pm$ 15 percent of average weight as determined by statistical tables). In studies examining the relationship between body image and depression, consistent associations have been found. For example, Fabian and Thompson (1989) found that level of depression, along with eating disturbance and teasing frequency, were highly correlated with body esteem. Another study (Allgood-Merten, Lewinsohn, & Hops, 1990) found that adolescent girls reported more depressive symptoms than did boys, and that depression was related to negative body image only in girls. These authors hypothesized that low self-esteem may act as an antecedent to depression in adolescents, and proposed a model of adolescent depression in which low self-esteem about body is an important contributor. This model was supported by the results of a study by Teri (1982) which found that body and self-image was the best predictor of BDI scores in subjects aged 14-

17 (both males and females), accounting for 27 percent of the explained variance. No significant age differences in depression were found in Teri's (1982) study, indicating that depression did not increase or decrease with age through the adolescent years.

A recent empirical study (Taylor & Cooper, 1992) attempted to determine a directional link between body image disturbance and depression. In this study, female students estimated their body size and rated the degree of dissatisfaction with their bodies before and after the induction of a negative or positive mood state. Compared with women who received the positive induced mood, the induction of low mood led to both more inaccurate size estimation (i.e., overestimation) and significantly greater body dissatisfaction. Furthermore, within the negative mood induction subjects, those who reported being concerned about their body size/shape were significantly more distorted in their size estimation and more dissatisfied after the negative mood induction than were subjects who were not concerned about their weight. Taylor and Cooper (1992) concluded that depressed mood may be one cause of negative body image.

Self-esteem. Low self-esteem is believed to be another antecedent of weight loss attempts in young

women (Striegel-Moore et al., 1986). Rosen et al. (1990) noted that "given the social bias toward thinness and beauty in women, it is not difficult to see how young girls could attribute personal inadequacy to their appearance or take the view that losing weight would increase social acceptability. Girls who are the most negative in their psychological adjustment might be the most vulnerable to this pressure" (p. 18). Striegel-Moore, Silberstein, and Rodin (1993) found that bulimic women appear to be preoccupied with not only their physical self, but also with their "social self," or how others perceive them. In this study, the social self measures of "public self-consciousness," "social anxiety," and "perceived fraudulence" were negatively correlated with body esteem and differentiated eating disturbed subjects from controls.

Many studies have investigated the association between self-esteem, body image, and eating disturbance in adolescence. For example, Fabian and Thompson (1989) found a strong relationship between low self-esteem, body image, and eating problems in female subjects as young as 10 years old. Similarly, in a study by Gross and Rosen (1988), adolescent bulimic subjects exhibited more negative body image and lower self-esteem than did normal controls. Also,

Rosen et al. (1987) found that girls who were trying to lose weight exhibited lower self-esteem than non-weight reducing girls. In another study of adolescent girls aged 15-19 (Brown et al., 1989), bulimic subjects were found to have poorer psychosocial adjustment, including poor self-image, than were non-eating disordered subjects.

The results of several recent studies conducted with adults have also indicated a link between self-esteem and body image and eating disturbance. For example, Heinberg and Thompson (1993) found that self-esteem, along with weight/size teasing and a measure of social comparison, was a significant predictor of body dissatisfaction. Studies by Fairburn, Kirk, O'Connor, Anastasiades, and Cooper (1987) and Fairburn, Peveler, Jones, Hope, and Dole (1993) both found that pretreatment level of self-esteem was a predictor of treatment outcome for bulimia nervosa subjects. The relationship between self-esteem and outcome was linear--i.e., those subjects with the lowest self-esteem fared the least well in treatment, even at 12 month follow-up.

At least two studies have attempted to differentiate eating disordered groups from other symptomatic groups on the basis of self-esteem. Mintz and Betz (1988) found that the degree of bulimics'

disturbed eating was highly correlated with lower self-esteem and more negative body image. Mintz and Betz's study examined normal subjects and five categories of eating disturbed subjects (chronic dieters, bingers, purgers, subthreshold bulimics, and bulimics). Only the bulimic subjects differed significantly from all the other groups on a measure of self-esteem. Also, Williams et al. (1993) found that anorexic and bulimic subjects exhibited lower self-esteem than normal controls and symptomatic control groups including obese dieters and nonobese dieters.

Sociocultural influences. Most sociocultural theories of the eating disorders maintain that in Western societies, current standards for feminine beauty overemphasize the desirability of thinness. As Striegel-Moore et al. (1986) wrote, "the more a woman believes that 'what is fat is bad, what is thin is beautiful, and what is beautiful is good,' the more she will work toward thinness and be distressed about fatness" (p. 247). There is a wealth of research to support the idea that society has changed its view of feminine attractiveness over the last 30 years. Garner, Garfinkel, Schwartz, and Thompson (1980) found that the weights of Miss America contestants and Playboy centerfolds decreased significantly during the

time period between 1960 and 1978. This study also reported that the number of articles about dieting in major women's magazines had increased during the same time period. In another study, Agras and Kirkley (1986) examined magazines from 1900 to 1986. They found that the desirability of women's body shapes had changed drastically during this century, with very thin body styles being fashionable in the 1920's and again since the mid 1970's. A recent study by Wiseman, Gray, Mosimann, and Ahrens (1992) used Garner et al.'s (1980) methodology to examine the weights of Miss America contestants and Playboy centerfolds from 1979 to 1988. These researchers found that cultural expectations for thinness have continued to demand a very thin body size. In fact, 69 percent of the Playboy centerfolds and 60 percent of the Miss America contestants studied had weights 15 percent or more below the expected weight for their height and age category. Ironically, maintaining body weight of 15 percent below expected weight is one of the DSM-IV diagnostic criteria for anorexia nervosa. Wiseman et al. (1992) reported that in recent years, weight as an index of women's ideal body image appears to have stabilized at about 13-19 percent below normal body weight. The authors describe this leveling off in terms of a floor effect, i.e., a further decrease in

percentage of expected weight would be even more unhealthy and almost impossible to achieve.

Our society's emphasis on fitness in recent years may have also served to increase the desirability of a thin body style. Physical fitness in our culture connotes success and acceptance. Further, we have been convinced that by "working out" strenuously and frequently enough, we can achieve any look we want. However, as noted by both Brownell (1991) and Striegel-Moore et al. (1986), physiological and genetic limitations prevent many people from ever attaining their ideal body shape, regardless of how active or physically fit they are.

Society's standards for thinness are almost certainly directed more at women than men. In 1986, Silverstein, Perdue, Peterson, and Kelly reviewed 48 men's and women's magazines for the frequency of articles and advertisements about dietary and shape-related issues. They found the frequency of occurrence of dietary issues to be 159 for females as compared to 13 for males. Women also appear to be more susceptible to society's messages. For example, Rodin and Striegel-Moore (1984) found that weight and body shape concerns were the main determinants of women's perception of their physical attractiveness; the same was not true for men. Also, in a study of

cognitive interference of food and shape-related words using the Stroop task (Green & McKenna, 1993), girls were found to exhibit interference effects for both types of words by age 14; whereas boys did not experience interference effects with either type of word.

There is also evidence to support the idea that greater endorsement of sociocultural beliefs regarding thinness and attractiveness may be linked to eating disturbance in females. Brownell (1991) asserted that cultural pressure to conform to ideas of what is beautiful, along with biological pressure to maintain a higher-than-desired body weight, combine to produce eating disorder behaviors like vomiting, laxative abuse, and excessive exercise. In support of this idea, Mintz and Betz (1988) and Striegel-Moore, Silberstein, and Rodin (1985, 1986) found that bulimics reported greater endorsement of societal mores regarding thinness and attractiveness.

It appears that societal standards for thinness and attractiveness are learned quite early in life. Faust (1983) noted that culturally defined ideas of attractiveness can be acquired during the preschool years and that by age seven or eight, children's ideas of attractiveness are similar to those of older adolescents and adults. In a 1963 study, Goodman,

Dornbush, Richardson, and Hastorf examined children's attitudes to various types of handicaps, and found that obese children were consistently ranked below children with physical disabilities ranging from missing limbs to being in a wheelchair.

Teasing history. In recent years, teasing about physical appearance has been theorized to play a role in the development of body image dissatisfaction. Cash et al. (1986), in a nationwide survey of 30,000 individuals, found that adult women who were teased about their appearance as children were more dissatisfied with their bodies than those who were not teased. Thompson and Psaltis (1988) found that the emotional effect of teasing on the individual was more highly correlated with eating disturbance than was the frequency of teasing. Both aspects of teasing, however, were significantly related to eating disturbance and dissatisfaction with body size. In another study, Fabian and Thompson (1989) found that teasing frequency was a significant predictor of body dissatisfaction. Recently, Richards, Thompson, and Coovert (1990) used covariance structural modeling to show that teasing may be causally related to the development of body dissatisfaction and general psychological dysfunction. In this study, greater actual weight was linked to teasing history,

indicating that higher weight may cause an increase in teasing. Finally, Thompson (1991) reported that eating-disturbed subjects had a greater history of teasing frequency and experienced a greater effect of teasing.

Teasing history may also contribute to body image and eating disturbance in adolescents. For example, Brown et al. (1989) found that adolescent bulimics reported being significantly less attractive as children and being more frequently teased about their appearance during childhood than were age-matched control subjects.

Menarcheal timing. There is some research which has focused on the role that puberty plays in the development of body image in females. Menarcheal status and menarcheal timing are the variables most frequently studied. Some studies have shown a relation between menarche and body esteem. For example, Koff, Rierdan, and Silverstone (1978) found that post-menarcheal girls were more satisfied with their bodies than premenarcheal girls. However, Fabian and Thompson (1989) found few differences between pre- and post-menarcheal girls, except that the premenarcheal subjects overestimated the size of their thighs more than postmenarcheal subjects. In

this study, menarche was found to interact with teasing history in producing body dissatisfaction.

There are several studies which have investigated the time of menarche onset and its relation to body image. Generally, the results of these studies suggest that late-maturing girls (after 14 years old) have a more positive body image than early (before the age of 11) or on-time maturers. Brooks-Gunn and Warren (1985) found that girls who experienced menarche on time had greater body dissatisfaction, body fat, overall weight, and eating disturbance than late maturers. There is also evidence that adult early maturers are shorter than late maturers, weigh more, and have more body fat (Garn, LaVelle, Rosenberg, & Hawthorne, 1986). When total body weight is corrected, the differences in body satisfaction between girls of different developmental timings disappear (Simmons, Blyth, & McKinney, 1983). Also, there are adolescent studies which suggest that menarcheal timing is not a critical factor in eating disturbance or body dissatisfaction (Thompson & Psaltis, 1988). Gralen et al. (1990) found that menarche was related to simple dieting and eating disturbance in sixth and eighth grade girls; however, this effect had disappeared in ninth and tenth grade subjects. More research is necessary to determine

whether or not menarcheal status and timing play significant roles in the development of body image and eating disturbances.

Body Image Disturbances and the Development and Maintenance of Disturbed Eating

Rosen (1992) and Thompson (1992) have recently suggested that eating abnormalities and extreme attempts to control weight associated with the eating disorders are secondary to overconcern with body shape and weight. Rosen and Thompson have proposed that anorexia and bulimia nervosa are two manifestations of a more general body image disorder which is similar to body dysmorphic disorder. Thompson has suggested that distortion in body image is developed and maintained by selective attention to information consistent with the belief that one has an unattractive body shape. Subsequently, negative thoughts develop and contribute to already present low self-esteem and depression. Individuals who are dissatisfied with their body shape may attempt to control the negative feelings associated with body image through dieting behaviors, thus predisposing them for the development of an eating disorder.

There is considerable evidence supporting the role of body image disturbance as a causal factor in anorexia and bulimia nervosa. Richards et al. (1990)

used causal modeling to demonstrate that body image disturbance had a direct effect on eating disturbance but not on global psychological functioning. In other studies, body dissatisfaction was found to be the best predictor of bulimic eating behaviors and concerns in teenage girls (Brown et al., 1989; Gross & Rosen, 1988). Striegel-Moore, Silberstein, Frensch, and Rodin (1989) found that measures of body dissatisfaction and perceived attractiveness were the best predictors of change in dieting and eating disturbance in college freshmen. Similarly, Attie and Brooks-Gunn (1989) found that dissatisfaction with body size was a significant predictor of eating problems in adolescent girls after a two-year interval. Neither maturational status nor family problems were found to be predictive. Finally, a recent study by Williamson, Netemeyer et al. (in press) examined eating disturbances in female college athletes and found that social pressure for thinness and negative self-evaluation, along with athletic performance anxiety, were associated with eating disorder symptoms; this association was mediated by dissatisfaction with body shape and weight.

Purpose of this Study

The objective of the present study was to examine the causal relationships between psychosocial risk

factors, body image, and eating disturbances. An etiological model was proposed in which psychological, sociocultural, developmental, and weight-related risk factors are hypothesized to be associated with increased body dissatisfaction. Psychological variables which were examined include depressive symptoms and low self-esteem; and the sociocultural variables of interest were a history of teasing about weight, and awareness of sociocultural and parental pressure to be thin. Menarcheal timing was examined as a developmental factor, along with the weight-related risk factor of body mass index. Body dissatisfaction was hypothesized to mediate the psychosocial risk factors and disturbed eating behavior. This risk factor model is illustrated in Figure 1. In the model, the latent constructs (e.g., psychopathology) are represented as circles, and the observed indicator variables (e.g., BDI score) are represented by rectangles. The latent variables on the left side of the model are considered to be independent (or ,in structural modeling terminology, exogenous); that is, they are presumed to be the result of outside influences not being examined by the model. The latent variable of body dissatisfaction is thought to be a dependent (or endogenous) variable. The model hypothesized that psychosocial risk factors

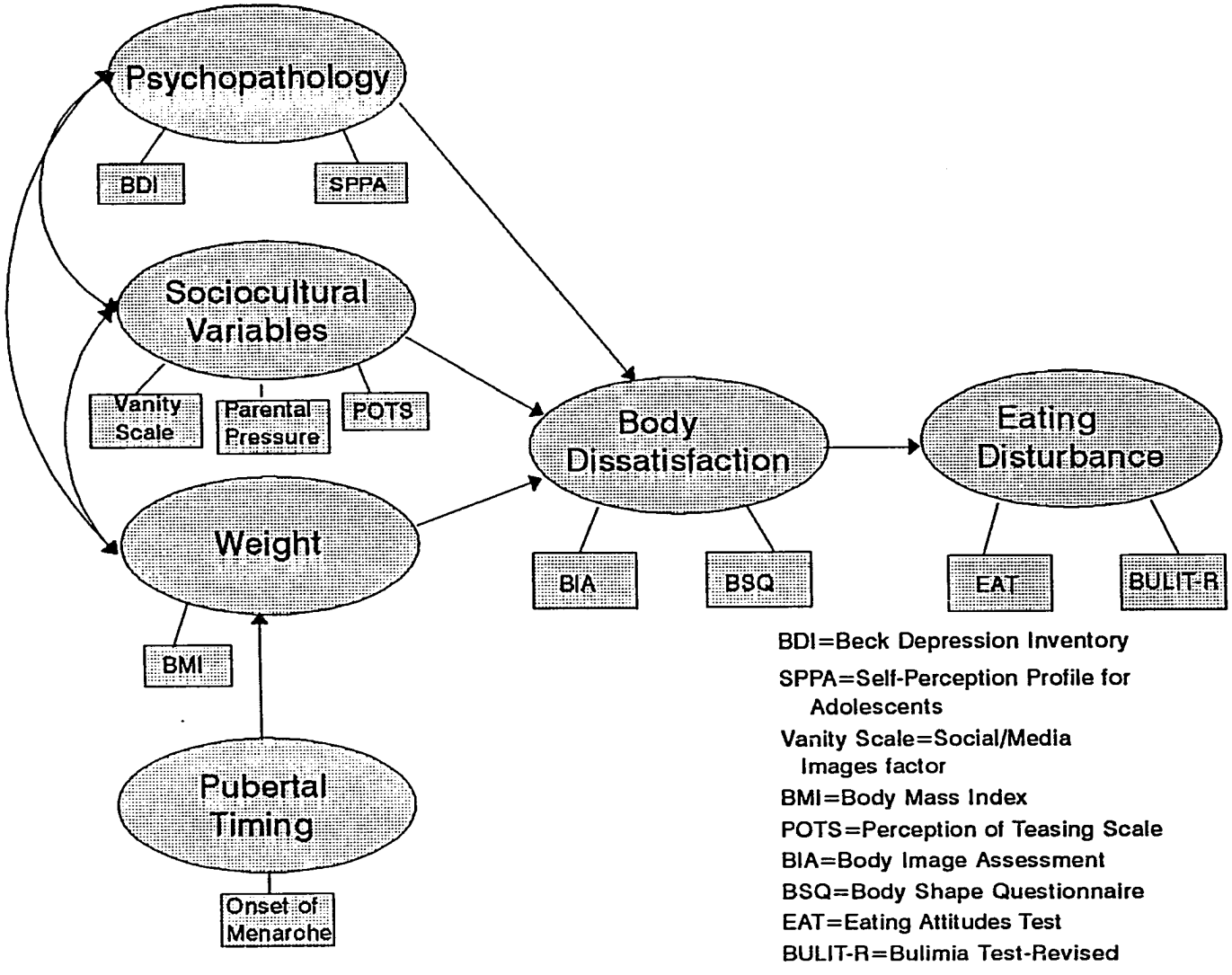

Figure 1. Hypothesized structural model

are associated with increased body dissatisfaction. The relationship between psychosocial risk factors and eating disturbances was hypothesized to be mediated by body dissatisfaction. Thus, the following hypotheses were derived from the model: (1) psychopathological risk factors (depressed mood and low self-esteem), sociocultural risk factors (teasing history, societal and parental pressure to be thin), body mass index, body dissatisfaction, and eating disturbances are distinctly different constructs; (2) psychological, sociocultural, and body weight risk factors are associated with increased body dissatisfaction; (3) body dissatisfaction mediates the association between psychosocial risk factors and eating disturbances; and (4) menarcheal timing is associated with increased body dissatisfaction because it also is associated with increased body fatness. This model was examined in a sample of adolescent females in grades nine through 12. In addition, the relationships between each of the exogenous variables were examined, as well as the efficacy with which each of the indicator variables measured the latent constructs of interest within this adolescent population.

METHOD

Subjects

Subjects were 345 female high school students. Subjects were recruited from the Louisiana State University Laboratory School and St. Joseph's Academy in Baton Rouge. Informed consent was obtained from St. Joseph's Academy students and their parent or guardian before participation in the study; parents of students from the LSU Laboratory School had previously signed blanket consent forms for their children to particpate in LSU-approved research. Copies of consent forms can be found in Appendix A.

Procedure

Subjects were asked to complete the questionnaires described below during class time. The questionnaires were administered in group format. While the subjects were completing these measures, one experimenter measured each subject's height and weight and individually administered the Body Image Assessment procedure. Following administration of all assessment instruments, subjects were debriefed about the purpose of the study, and any questions or concerns were addressed. The assessment measures that subjects were asked to complete consisted of the following:

Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987). The BSQ is a 34-item self-report questionnaire that measures dissatisfaction with body shape and size. This measure was used as an indicator variable for body dissatisfaction in the proposed etiological model. The BSQ has been validated on samples of eating disordered and nonclinical subjects and has been shown to clearly differentiate patients from nonpatients. It has also distinguished nonpatient subjects who reported being concerned about their weight from those who were unconcerned (Cooper et al., 1987). A recent confirmatory factor analytic study (Williamson, Barker, Bertman, & Gleaves, in press) found that the BSQ may be a good measure for defining nonclinical subjects with the symptoms of body dissatisfaction and dietary restraint. Bunnell et al. (1992) recently examined the BSQ in a sample of adolescent females (aged 13-17) and found it to be a valid measure of body dissatisfaction among adolescents. Concurrent validity with the Eating Attitudes Test (Garner & Garfinkel, 1979) was found to be high and was comparable to the correlation values reported in Cooper et al.'s (1987) original validation study. See Appendix B for a copy of this measure.

Beck Depression Inventory (BDI; Beck et al., 1961). The BDI contains 21 items that assess cognitive, behavioral, affective, and somatic complaints of depression. The BDI has been used extensively with adults and has been shown to distinguish nondepressed, moderately depressed, and severely depressed subjects. It possesses excellent psychometric properties (Beck & Beamsdorfer, 1974). Teri (1982) found that the BDI is a reliable and valid measure for adolescents, with a factor structure similar to that obtained with adults. Females in Teri's sample (n=586) reported high depression scores significantly more frequently than males. The mean BDI score for the total sample was 8.47 (SD=8.03); the mean score for females was 8.80 (SD=7.16). A readability analysis was conducted for Teri's study; the BDI was found to require approximately a fifth-grade reading level. For this study, a 20-item BDI was administered to subjects instead of the usual 21-item measure; the item measuring interest in sex was not presented to subjects. This item has been previously rated as reactive for adolescents (Reynolds & Coates, 1986). In a study of depression in 675 adolescents by Reynolds and Coates (1982), the coefficient alpha for the 20-item BDI was reported to be .87, which indicates good internal consistency.

The BDI was used as the indicator variable for depression in the proposed model. See Appendix C for a copy of this measure.

Self-Perception Profile for Adolescents (SPPA; Harter, 1988). This measure is an upward extension of the Self-Perception Profile for Children (Harter, 1985). As in the child version, it taps adolescents' perceptions of the separate domains of scholastic competence, athletic competence, physical appearance, social acceptance, and behavioral conduct. In addition, the adolescent version also assesses perceptions of job competence, close friendships, and romantic appeal. The scale also contains a separate measure of global self-worth which constitutes a measure of one's perception of his/her worth as a person, rather than domain specific adequacy. Each of the nine subscales contains five items, for a total of 45 items in the entire scale. It may be administered to groups, as well as individually. Psychometric properties for the scale are reported to be good, including high internal consistency (Cronbach's alpha) and a clear factor pattern, with each of the specific subscales defining its own factor. Harter recommends that the SPPA be used with adolescents from ninth to twelve grade. The global self-worth scale of the SPPA was used as an indicator variable for the latent

construct of self-esteem in the proposed model. A copy of this measure is found in Appendix D.

Perception of Teasing Scale (POTS; Thompson & Cattarin, 1993). This scale is a revision of the Physical Appearance Related Teasing Scale (PARTS; Thompson, Fabian, Moulton, Dunn, & Altabe, 1991), which assesses an individual's perception of being teased about appearance. The revised POTS containss appearance-related questions that directly specify teasing about elevated weight/size. The scale contains 22 items and is based on female subjects' perceptions of being teased between the ages of five and 16. A readability analysis conducted on the POTS indicated that it requires a fifth grade reading level. The POTS was used as a variable measuring teasing history in the proposed theoretical model. Please see Appendix E for a copy of this measure.

Vanity Scale Social/Media Images factor (Netemeyer, Burton, & Lichtenstein, 1993) was used as an indicator variable measuring awareness of social pressure to be thin. This 27-item questionnaire measures the degree to which respondents compare themselves to the images of thinness and attractiveness presented by advertising and the media. Internal consistency estimates for the Vanity Scale

Social/Media Images factor range from .80 to .85 (Netemeyer, Burton, & Lichenstein, 1993), and it is highly correlated with other aspects of "vanity", including concern for physical appearance. See Appendix F for a copy of this scale.

Body Image Assessment (BIA; Williamson, Davis, Bennett, Goreczny, & Gleaves, 1989). The BIA utilizes nine silhouettes of female body shapes, ranging from very thin to very large. Subjects are asked to select the silhouettes which most accurately depict their current and ideal body sizes. A subject's current body size score (CBS) minus ideal body size score (IBS) can be derived as a measure of body size dissatisfaction. This difference score has been called the BIA discrepancy score; it was used as an indicator variable for the construct of body dissatisfaction. The BIA has been found to differentiate bulimia nervosa subjects from normal controls (Williamson, Kelley, Davis, Ruggiero, & Blouin, 1985) and bulimia nervosa subjects from binge eaters (Davis, Williamson, Goreczny, & Bennett, 1989). Test-retest reliability has been found to be .90 for CBS and .71 for IBS, demonstrating the temporal stability of the two measures (Williamson et al., 1989). The discrepancy score from the BIA has been found to be a valid measure of body size

dissatisfaction (Williamson, Gleaves, Watkins, & Schlundt, 1993). A copy of the BIA silhouettes can be found in Appendix G.

Eating Attitudes Test (EAT; Garner & Garfinkel, 1979). The EAT is a 40-item self-report scale measuring the symptoms of anorexia nervosa (e.g., restrictive eating). A total score of 30 or more is used as a cutoff for anorexia. It has been used extensively as a measure of disturbed eating habits in both adults (e.g., Garfinkel et al., 1992) and adolescents (e.g., Steiger et al., 1992; Gross & Rosen, 1988; Gralen et al., 1990). Test-retest reliability of the EAT has been reported to be .79 for a clinical sample and .94 for a sample of anorexics and normal subjects. Cronbach's alpha among adolescent girls was found to be .85 (Steiger et al., 1992). Factor analysis of the EAT has found that it is comprised of three factors: dieting, bulimia and food preoccupation, and oral control. The EAT has been shown to discriminate bulimia nervosa subjects from normals, and anorexia nervosa subjects from normals; however, it has not discriminated between anorexia nervosa and bulimia nervosa. The total score of the EAT was used to measure disturbed eating in the proposed model. For a copy of this measure, see Appendix H.

The Bulimia Test-Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991). The BULIT-R is a 28-item test specifically designed to measure the symptoms specified by the DSM-III-R criteria for bulimia. Its questions concern binge eating, purgative behavior, negative affect related to eating, and weight fluctuations. The BULIT-R has been shown to differentiate bulimics from normals (Thelen et al., 1991). The BULIT has been previously used as a measure of eating disturbance in normal college students (Coovert, Thompson, & Kinder, 1988; Thompson, 1991) and is frequently used as a measure of bulimic tendencies in clinical populations of both adolescents and adults. It was used as an indicator variable for eating disturbance in the present study. For a copy of the BULIT-R, see Appendix I.

Additional questions. In addition to completing these self-report measures, subjects were asked to respond (in writing) to four questions. The first question asked how old subjects were (in years and months) when they first began menstruating. These figures were converted into an index of early/late menarcheal timing by the following formula: age of menarche onset minus normal age of onset (12.8 years; Rees, 1993) The remaining questions were two Likert-scale questions regarding how much pressure subjects

feel from each of their parents to be thin; and a Likert-scale question asking how concerned subjects are about their body weight and shape. These questions can be found in Appendix J. Also, each subject's Body Mass Index (BMI) was derived from their height and weight. This formula for estimating body composition is computed by dividing the subject's weight, in kilograms, by the square of his/her height, in meters. Billewicz, Kelmsley, and Thomson (1962) compared the BMI with other height/weight ratios for estimating body fat and concluded that BMI was the most valid. It has been found to be highly correlated (r=.96) with body fat as estimated by body density, total body water, and total potassium (Webster, Hesp, & Garrow, 1984).

Data Analysis

The hypothesized model of etiological factors for the development of eating disturbance in adolescent girls described above was tested using structural equation modeling with the LISREL 7 program (Joreskog & Sorbom, 1989). This statistical method, also called causal modeling and covariance structure analysis (Bentler, 1989), allows the use of correlational data to determine the fit of theoretical models to data collected to test the model. Hypothesized in the structural equation model is a specified causal

structure among a set of unobservable constructs, each measured by a set of observed indicator variables. This model can then be tested for fit in a particular population. A full structural equation model consists of two components: (a) a measurement model that defines relations between measured variables and the latent constructs for which the observed variables are used as approximations (essentially, factor analysis); and (b) a structural model that specifies the hypothesized causal structure among the latent constructs. The sample data are transformed into covariance matrices and described by a series of regression equations; the hypothesized model is then analyzed to examine its fit in the population from which the sample has been drawn. This analysis provides estimates of the parameters in the model, along with several measures of goodness-of-fit of the model to the sample data.

A complete structural equation model begins with a path diagram that represents the theoretical relations between the constructs being tested. Structural equation modeling is assumed to be superior to path analysis (which also tests theoretical relationships between variables), because in path analysis measured variables are assumed to be equivalent to whatever underlying construct they are

intended to measure; error in measurement is not taken into account. Because of the measurement component of covariance modeling, this limitation is avoided (Fassinger, 1987).

The fit between an estimated model to the sample data is determined by several goodness-of-fit measures. These are obtained by comparison between the estimated population covariance matrix (based on the specified model) and the sample covariance matrix computed from the sample data. Goodness-of-fit measures include the Chi-square value, which is a test of the null hypothesis that a model is adequately described by the data. A significant Chi-square statistic rejects the null hypothesis, suggesting that the model does not match the observed data. The Chi-square value, however, is easily distorted by sample size and sensitive to violations of normality assumptions (Marsh, Balla, & McDonald, 1988). Several other goodness-of-fit indices will be examined in this study, including the Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI), which are provided by LISREL; and the Tucker-Lewis Index (TLI) and Bentler's (1990) Comparative Fit Index (CFI), which are based on comparisons with a null model. According to Marsh et al. (1988), the Tucker-Lewis Index is the goodness-of-fit index which is most

independent of sample size. Goodness-of-fit values of .85 or higher are considered to indicate a good fit between the estimated model and the sample data.

In addition to overall measures of fit, the LISREL program produces modification indices for each fixed parameter in the model, indicating how that parameter (i.e., that path) could be changed to provide for a better fit with the data. Model modifications, however, should be made only if they are theoretically and substantively meaningful.

RESULTS

Sample Characteristics

Subjects participating in this study ranged in age from 14 to 17 years old. The total number of subjects participating at each age were as follows: 14 years (n=49, 14.20 percent); 15 years (n=126, 36.52 percent); 16 years (n=117; 33.91 percent); and 17 years (n=53, 15.36 percent). Racial composition of the sample was predominantly Caucasian (n=328, 95.07 percent); subjects also included African-Americans (n=13, 3.77 percent) and Asian-Americans (n=4, 1.16 percent).

The total sample of 345 subjects was randomly divided into two smaller samples consisting of 172 subjects and 173 subjects, respectively. The first sample was used to test the proposed structural model and to make appropriate modifications. The second sample was then used for cross-validation of the final structural model. Bentler and Chou (1987) have suggested that structural modeling analyses include five subjects for every one parameter estimated. Following this guideline, a minimum of 150 subjects in each sample was considered sufficient for accurate parameter estimation.

Sample means and standard deviations for weight, height, and body mass index (BMI) according to age

group are presented in Tables 1 and 2. In Table 3, these data are compared to body mass index norms presented by Must, Dallal, and Dietz (1991), based on a large, nationally-representative sample. Body mass index values of subjects in both samples are somewhat higher than the 50th percentile normative values presented by Must and colleagues, indicating that subjects were slightly heavier than average adolescent girls. However, subjects' body mass indexes were well below the 85th percentile norms for 14- to 17-year-olds (23.88 to 25.23) and did not approach obesity levels (BMI$\geq$27).

An age by group analysis of variance (ANOVA) was used to compare subjects' body mass index values. BMI did not differ between groups (F (1,337)=0.134; p=.71) or among age levels (F (3,337)=2.04; p=.11), and there was no significant age by group interaction (F (3,337)=1.33; p=.26). Therefore, subjects' weights did not significantly increase with age.

Questionnaire Data

Means and standard deviations of subjects' scores on assessment measures are presented in Tables 4 and 5. An age by group multivariate analysis of variance (MANOVA) was used to compare scores on all assessment measures. Results showed that the interaction between age and group was not significant (Wilk's Lambda=.912,

Table 1.

Means and standard deviations for height, weight, and body mass index for Sample 1

Age	n	Mean Height (inches)	Mean Weight (pounds)	BMI
14	24	63.71 (2.33)	115.46 (16.95)	19.98 (2.77)
15	75	64.67 (2.40)	124.64 (23.07)	20.89 (3.42)
16	55	64.35 (2.27)	129.80 (22.02)	22.05 (3.96)
17	18	64.22 (2.13)	125.78 (15.96)	21.42 (2.47)

Table 2.

Means and standard deviations for height, weight, and body mass index for Sample 2

Age	n	Mean Height (inches)	Mean Weight (pounds)	BMI
14	25	64.28 (2.17)	128.36 (14.09)	21.83 (2.34)
15	51	64.31 (2.18)	122.51 (17.09)	20.81 (2.90)
16	62	64.73 (2.57)	129.56 (24.57)	21.70 (3.80)
17	35	65.57 (2.81)	130.57 (18.27)	21.56 (2.89)

Note: BMI=body mass index
Standard deviations are in parentheses

Table 3.

Comparison of body mass index (BMI) data to reference data

	Age	n	Subjects' BMI	Reference BMI
Sample 1				
	14	24	19.98	19.32
	15	75	20.89	19.69
	16	55	22.05	20.09
	17	18	21.42	20.36
Sample 2				
	14	25	21.83	19.32
	15	51	20.81	19.69
	16	62	21.70	20.09
	17	35	21.56	20.36

Note: Reference body mass index values correspond to 50th percentile normative values.

Table 4.

Means and standard deviations of assessment measures for Sample 1

Age	EAT	BULIT	DISC	BDI	SPPA	SOCIAL	MOTHER	FATHER	POTS
14	15.40 (12.71)	53.55 (19.45)	0.15 (2.00)	8.50 (7.35)	3.04 (0.72)	41.35 (7.53)	2.10 (1.68)	1.55 (0.83)	14.85 (6.87)
15	17.83 (15.39)	51.33 (17.79)	1.12 (1.99)	9.34 (8.37)	3.07 (0.78)	43.38 (10.24)	2.16 (1.30)	2.17 (1.54)	17.86 (10.51)
16	18.39 (14.01)	52.93 (17.85)	1.51 (1.68)	11.00 (8.68)	2.86 (0.66)	43.78 (10.94)	2.63 (1.84)	2.29 (1.68)	18.73 (9.53)
17	22.15 (13.47)	55.15 (16.62)	1.62 (1.19)	9.39 (9.96)	2.75 (0.81)	44.15 (10.60)	3.23 (2.24)	2.31 (1.49)	18.00 (8.48)

Note: EAT=Eating Attitudes Test; BULIT=Bulimia Test-Revised; DISC=Body Image Assessment Discrepancy Score; BDI=Beck Depression Inventory; SPPA=Self-Perception Profile for Adolescents global self worth factor; SOCIAL=Vanity Scale Social/Media Images factor; MOTHER=Subjects' ratings of maternal pressure for thinness; FATHER=Subjects' ratings of paternal pressure for thinness; POTS=Perception of Teasing Scale.

Table 5.

Means and standard deviations of assessment measures for Sample 2

Age	EAT	BULIT	DISC	BDI	SPPA	SOCIAL	MOTHER	FATHER	POTS
14	18.11 (11.21)	57.26 (23.58)	1.31 (1.64)	13.11 (13.63)	2.71 (0.95)	45.37 (8.46)	2.89 (1.85)	1.90 (1.37)	18.37 (11.60)
15	20.92 (15.85)	58.28 (21.57)	1.10 (1.74)	12.62 (9.94)	2.64 (0.91)	45.10 (7.96)	2.49 (1.55)	2.18 (1.64)	19.39 (12.85)
16	19.27 (15.61)	53.12 (18.13)	0.98 (1.92)	10.49 (8.14)	2.86 (0.82)	43.14 (10.17)	2.94 (1.91)	2.04 (1.49)	16.88 (9.44)
17	19.92 (12.33)	58.12 (18.85)	0.88 (1.71)	8.08 (5.33)	3.20 (0.62)	41.36 (7.95)	3.44 (2.08)	2.52 (1.92)	20.52 (13.13)

Note: EAT=Eating Attitudes Test; BULIT=Bulimia Test-Revised; DISC=Body Image Assessment Discrepancy Score; BDI=Beck Depression Inventory; SPPA=Self-Perception Profile for Adolescents global self worth factor; SOCIAL=Vanity Scale Social/Media Images factor; MOTHER=Subjects' ratings of maternal pressure for thinness; FATHER=Subjects' ratings of paternal pressure for thinness; POTS=Perception of Teasing Scale.

F (27, 724)=.856; p=.68). There were also no significant main effects due to group (Wilk's Lambda=.976, F (9, 248)=.650; p=.75) or age (Wilk's Lambda=.891, F (27, 724)=1.07; p=.36). Thus, subjects' scores did not differ by sample, and the scores of younger subjects were not significantly different from those of older subjects.

A comparison of these scores with data reported by other researchers indicates that subjects in this study may be somewhat more pathological than other samples of adolescents and young women in levels of eating disturbance, body dissatisfaction, and depression. For example, the mean score of the Eating Attitudes Test for all subjects across age groups was 19.28 (SD=14.79). This average score is somewhat higher than that reported by Garner and Garfinkel (1979; mean score= 15.4; SD=11.0) and Denniston, Roth, and Gilroy (1992; mean score=13.32, SD=9.95) in two groups of college females. The average Body Shape Questionnaire score of the present sample (100.54, SD=36.3) was higher than the mean score of nonclinical college females (81.5, SD-28.4) found by Cooper et al. (1987). On the Beck Depression Inventory, the mean score of this sample was 10.95 (SD=9.41) which approaches the range of mild mood disturbance and is higher than Teri's (1982) finding of an average BDI

score of 8.80 (SD=7.16) among 340 adolescent females aged 14-17 years old.

Pearson product-moment correlations for the assessment measures in both samples are presented in Tables 6 and 7. Correlations among the measures were similar across samples. The Body Shape Questionnaire, which was proposed to be an indicator variable for body dissatisfaction, was highly correlated both with measures of eating disturbance and body dissatisfaction. Similar results were presented in a recent factor-analytic study by Williamson, Barker et al. (in press). This study found that the BSQ loaded equally on factors measuring dietary restraint and body dysphoria. Since the ability of indicator variables to discriminate between latent variables is essential in structural modeling, the Body Shape Questionnaire was eliminated as an indicator variable for body dissatisfaction in subsequent analyses. Thus, the discrepancy score from the Body Image Assessment procedure became the only indicator variable measuring body dissatisfaction.

In the proposed structural model, menarcheal timing was hypothesized to influence body dissatisfaction and eating disturbance because it would be associated with higher body weight. However, correlations between menarcheal timing and BMI were

Table 6.
Correlations among all measures for Sample 1

	EAT	BULIT	BSQ	DISC	BDI	SPPA	SOCIAL	MOTH	FATH	POTS	BMI	AGE	MEN
EAT	1.00	.72*	.76*	.48*	.60*	-.36*	.44*	.21	.18	.29*	.09	.15	.02
BULIT		1.00	.77*	.42*	.68*	-.45*	.41*	.25*	.29*	.42*	.22*	.08	.06
BSQ			1.00	.63*	.65*	-.44*	.54*	.35*	.39*	.49*	.36*	.27*	.06
DISC				1.00	.37*	-.18	.40*	.38*	.33*	.38*	.42*	.26*	.07
BDI					1.00	-.57*	.45*	.16	.19	.44*	.15	.16	.06
SPPA						1.00	-.30*	-.12	-.09	-.21*	-.09	-.12	-.01
SOCIAL							1.00	.30*	.25*	.30*	.18	.11	.06
MOTHER								1.00	.50*	.26*	.39*	.21*	-.15
FATHER									1.00	.30*	.45*	.14	-.01
POTS										1.00	.47*	.17	-.01
BMI											1.00	.17	.07
AGE												1.00	.07
MEN													1.00

Note: EAT=Eating Attitudes Test; BULIT=Bulimia Test-Revised; DISC= Body Image Assessment discrepancy score; BDI=Beck Depression Inventory; SPPA=Self-Perception Profile for Adolescents (global self-worth factor); SOCIAL=Vanity Scale Social/Media Images factor; MOTHER=perceived maternal pressure to be thin; FATHER=perceived paternal pressure to be thin; POTS=Perception of Teasing Scale; BMI=body mass index; MEN=menarcheal timing.

Significant correlations ($p<.01$) are denoted by an asterisk.

Table 7.
Correlations among all measures for Sample 2

	EAT	BULIT	BSQ	DISC	BDI	SPPA	SOCIAL	MOTH	FATH	POTS	BMI	AGE	MEN
EAT	1.00	.69*	.75*	.44*	.50*	-.19	.46*	.26*	.18	.16	.14	.03	.06
BULIT		1.00	.79*	.51	.67*	-.37*	.47*	.34*	.26*	.31*	.24*	-.02	.07
BSQ			1.00	.58*	.62*	-.35*	.52*	.35*	.21*	.30*	.31*	-.02	.09
DISC				1.00	.38*	-.26*	.37*	.23*	.19*	.31*	.40*	-.11	.02
BDI					1.00	-.55*	.44*	.21*	.21*	.30*	.12	-.15	.03
SPPA						1.00	-.22*	-.17	-.15	-.15	-.06	.16	-.08
SOCIAL							1.00	.15	.11	.27*	.07	-.15	.04
MOTHER								1.00	.39*	.10	.13	.05	-.00
FATHER									1.00	.11	.10	.04	.04
POTS										1.00	.50*	.01	-.05
BMI											1.00	.02	-.12
AGE												1.00	.10
MEN													1.00

Note: EAT=Eating Attitudes Test; BULIT=Bulimia Test-Revised; DISC= Body Image Assessment discrepancy score; BDI=Beck Depression Inventory; SPPA=Self-Perception Profile for Adolescents (global self-worth factor); SOCIAL=Vanity Scale Social/Media Images factor; MOTHER=perceived maternal pressure to be thin; FATHER=perceived paternal pressure to be thin; POTS=Perception of Teasing Scale; BMI=body mass index; MEN=menarcheal timing.

Significant correlations ($p<.01$) are denoted by an asterisk.

nonsignificant in both samples (i.e., .07 in Sample 1 and -0.12 in Sample 2). In fact, correlations between menarcheal timing and all of the other assessment measures were very low. Menarcheal timing was therefore excluded from further analyses.

In the proposed model, social images of thinness, subjects' Likert-scale ratings of how much pressure to be thin they feel from their mother and from their father (combined into a variable called "parental pressure for thinness"), and a history of teasing about weight were combined into a latent variable labeled "sociocultural variables." Since these measures were only moderately correlated in both samples, they were not combined but were left as separate exogenous (independent) variables. Figure 2 illustrates the revised hypothesized model, with the Body Shape Questionnaire excluded as an indicator variable for body dissatisfaction, menarcheal timing eliminated as an exogenous (independent) variable, and with "social images of thinness," "parental pressure for thinness," and "weight teasing history" replacing "sociocultural variables" as endogenous latent variables.

Evaluating the Measurement Model

The measurement model portion of structural modeling analysis concerns the relations between

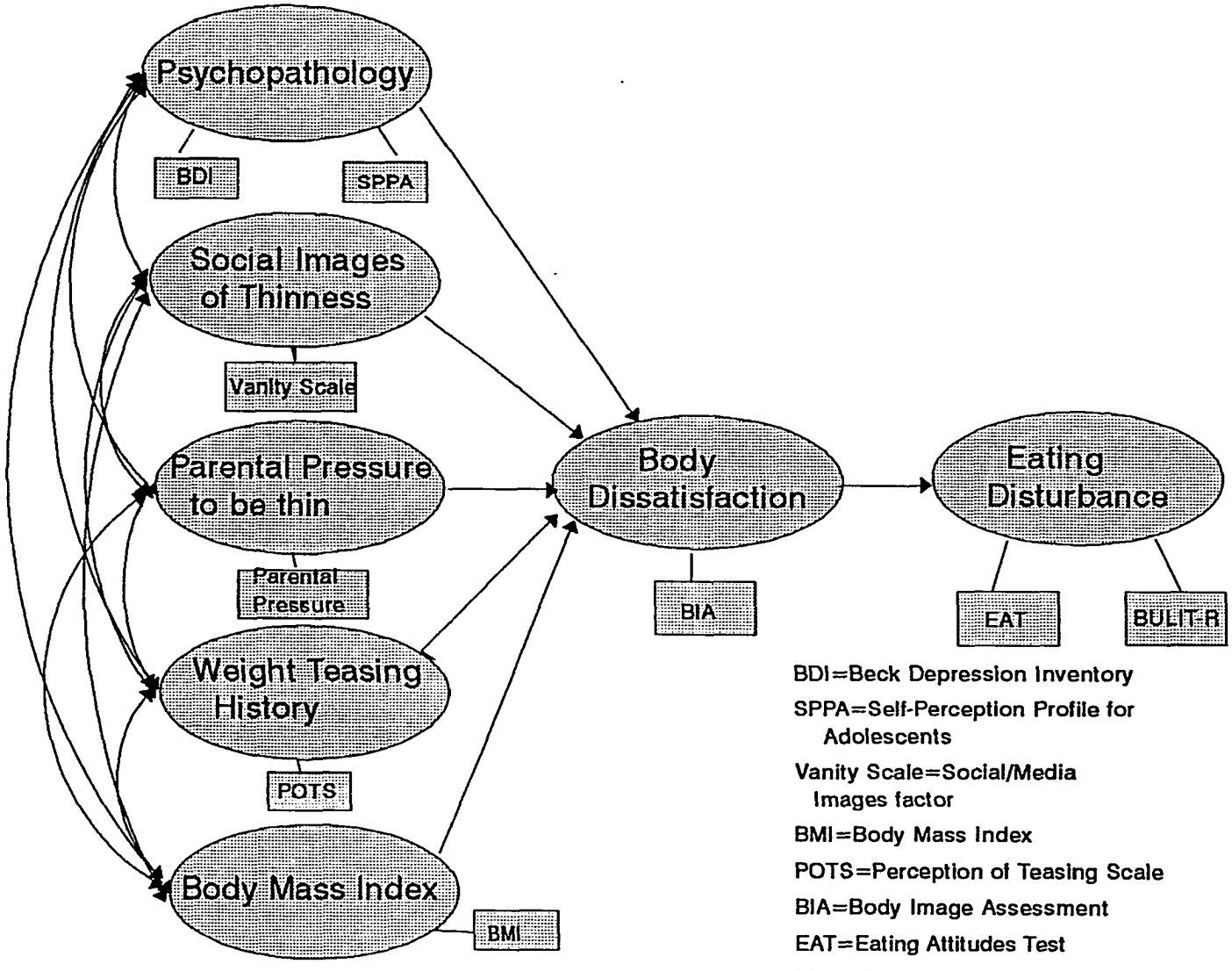

Figure 2. Revised hypothesized structural model

observed (or indicator) variables and latent variables or constructs. Specifically, the measurement model is used to determine: 1) error associated with using questionnaires to measure latent constructs (i.e., the reliability of the measures); and 2) the convergent and discriminant validity of indicator variables used to describe latent variables. Latent variables are ideally defined by the variance shared among indicators of a construct (e.g., items of a questionnaire); variance unique to each indicator is not assigned to the latent variable but is defined as error.

In the present study, internal consistency reliability was determined for each of the multi-item indicators using Cronbach's alpha. Each indicator's alpha level was used as an estimate of error (i.e., 1 minus alpha) in the structural equations. For indicator variables consisting of only one item (e.g., body mass index) the error term was fixed to equal .10, which assumed moderately high but imperfect reliability of the indicator. Alpha levels for each measure are presented in Table 8.

The items of the Beck Depression Inventory and Self-Perception Profile for Adolescents global self-worth factor were combined to produce the latent variable labeled "psychopathology." Similarly, the

Table 8.
Cronbach's alpha, error terms, and factor loadings for all variables

Sample 1

Variable	Alpha	Error	Loading
Psychopathology (BDI + SPPA)	.80	.20	.90
Body dissatisfaction (DISC)	.93	.07	.96
Eating disturbance (EAT + BULIT-R)	.94	.06	.96
Social images of thinness (Vanity Scale)	.89	.11	.94
Parental pressure for thinness	.90	.10	.95
Weight teasing history (POTS)	.93	.07	.96
Body Mass Index	.90	.10	.95

Sample 2

Variable	Alpha	Error	Loading
Psychopathology (BDI + SPPA)	.79	.21	.89
Body dissatisfaction (DISC)	.93	.07	.96
Eating disturbance (EAT + BULIT)	.95	.05	.97
Social images of thinness (Vanity Scale)	.84	.16	.92
Parental pressure for thinness	.90	.10	.95
Weight teasing history (POTS)	.97	.03	.98
Body Mass Index	.90	.10	.95

Note: Alpha=Cronbach's alpha reliability estimate; Error=1 minus alpha; Loading=alpha^2

BDI=Beck Depression Inventory; SPPA=Self-Perception Profile for Adolescents global self-worth factor; DISC=Body Image Assessment discrepancy score; EAT=Eating Attitudes Test; BULIT=Bulimia Test-Revised; POTS=Perception of Teasing Scale

"eating disturbance" latent variable comprised the items from both the Eating Attitudes Test and the Bulimia Test-Revised. In order to test the convergent validity of these combined measures, variance extracted estimates were determined. These estimates indicate the amount of variance captured by a measure relative to the variance due to random measurement error (Fornell & Larcker, 1981). For both pairs of measures, the variance extracted estimates were less than the correlation between the measures, suggesting a lack of discriminant validity between the measures in each pair (e.g., between the Eating Attitudes Test and the Bulimia Test-Revised). In sum, estimates from this procedure supported modeling the items from the Eating Attitudes Test and the Bulimia Test-Revised as the "eating disturbance" latent variable, and items from the Beck Depression Inventory and the Self-Perception Profile for Adolescents global self-worth factor as the "psychopathology" latent variable. Therefore, in the structural model that was tested with the data from the first sample of subjects, the exogenous latent variables were: 1) "psychopathology", measured by a combination of the items from the Beck Depression Inventory and the Self-Perception Profile for Adolescents global self-worth factor; 2) "social images of thinness", measured by the Vanity Scale

social/media images factor; 3) "parental pressure to be thin" as rated on Likert scales by subjects for both father and mother; 4) "weight teasing history" as measured by the items from the Perception of Teasing Scale; and 5) "body mass index." The two endogenous variables of the final proposed structural model were 1) "body dissatisfaction", as measured by the discrepancy score of the Body Image Assessment procedure; and 2) "eating disturbance", measured with a combination of the items from the Eating Attitudes Test and the Bulimia Test-Revised.

Evaluating the Structural Model

The structural model tests the relations among independent (or exogenous) and dependent (or endogenous) variables in the model, accounting for measurement error. All the paths (essentially, standardized regression equations) between variables are estimated and evaluated simultaneously. The structural model permits directional predictions among a set of variables, along with the modeling of indirect effects.

Several indices were used to examine the "fit" of the proposed model to the data. These indices, which were discussed earlier in the Method section, include the Chi-square value; a nonsignificant Chi-square indicates that a model is adequately described by the

data. The Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI) have a maximum of one; values closer to one are indicative of a good fit between model and data. The AGFI is adjusted for degrees of freedom; therefore, it decreases as more paths are estimated.

The Tucker-Lewis index (TLI), based on comparison of the model being tested with a null model, also imposes a penalty for estimating more paths, and is considered to be the goodness-of-fit index that is least affected by sample size. Bentler (1990) reported similar efficiency for the Comparative Fit Index (CFI).

Another criterion for determining goodness-of-fit is to examine the significance of individual paths among latent variables, and to determine how much variance in the dependent variable(s) is explained by the independent variables. Finally, as discussed previously, the LISREL program produces modification indices for each path in the model, indicating how that path could be changed to provide for a better fit with the data.

Goodness of fit indices for the proposed structural model (Model 1) are presented in Table 9. This model yielded a significant Chi-square, with a GFI of .90 and an AGFI of .43. The path estimates and

Table 9.

Goodness-of-Fit Indices for structural models

Model	df	X^2	GFI	AFGI	TLI	CFI
Sample 1						
Null	21	381.62	.53	.37	--	--
Model 1	5	83.39	.90	.43	.70	.79
Model 2	4	2.45	.99	.97	1.02	1.00
Model 3	8	28.96	.96	.85	.85	.94
Sample 2						
Model 2	4	7.95	.99	.91	.94	.99

Note:
Model 1 = Revised hypothesized model (see Figure 3)

Model 2 = Model 1 with path from "psychopathology" to "eating disturbance" (see Figure 4)

Model 3 = Model with "psychopathology" as an endogenous variable, with a path from "eating disturbance" to "psychopathology" (see Figure 5)

df=degrees of freedom; GFI=Goodness-of-Fit Index; AGFI= Adjusted Goodness-of-Fit Index; TLI=Tucker-Lewis Index; CFI=Bentler's Comparative Fit Index

correlations between exogenous variables for this model are presented in Figure 3. In the figure, exogenous variables are labeled 1 ("psychopathology") to 5 ("body mass index"); the correlation between these two latent variables is written as "r15=.19." All path estimates were significant except the path from "weight teasing history" to "body dissatisfaction." As can be seen in Figure 3, the correlations among exogenous variables are substantial. Forty-two percent of the total variance in "body dissatisfaction" was accounted for by the exogenous variables, and 25 percent of the variance in "eating disturbance" was accounted for by "body dissatisfaction."

Modification indices for this model suggested a better fit with the data could be obtained if a path were estimated from "psychopathology" directly to "eating disturbance." Since this change could be theoretically justified, the additional path was estimated in Model 2 (illustrated in Figure 4). The goodness-of-fit indices for this model, which are presented in Table 9, indicated a very good fit of the model to the data. It produced a nonsignificant Chi-square value; again, all paths were significant except the path from "weight teasing history" to "body dissatisfaction." The exogenous variables accounted

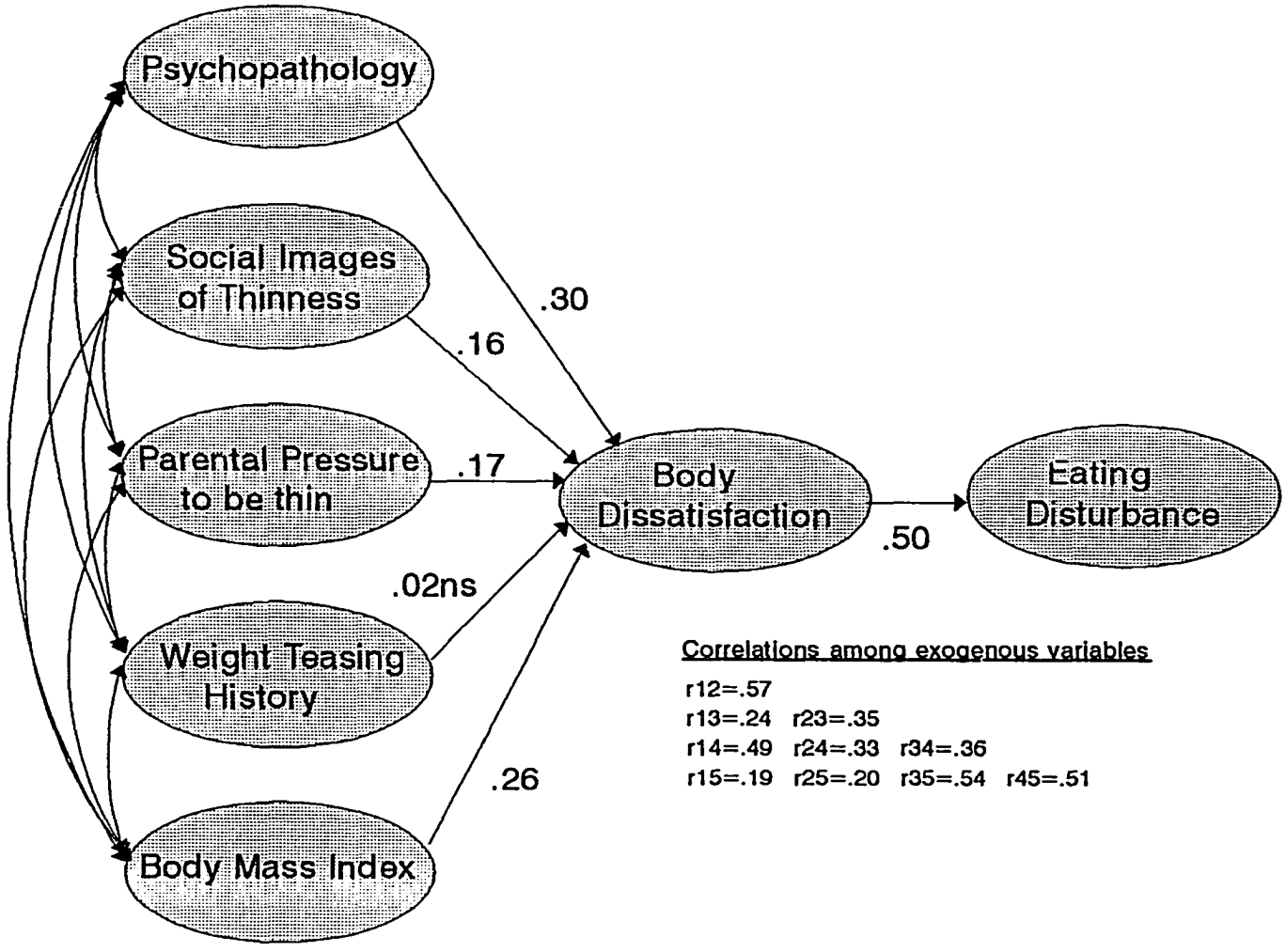

Figure 3. Revised hypothesized model tested with Sample 1 data (Model 1)

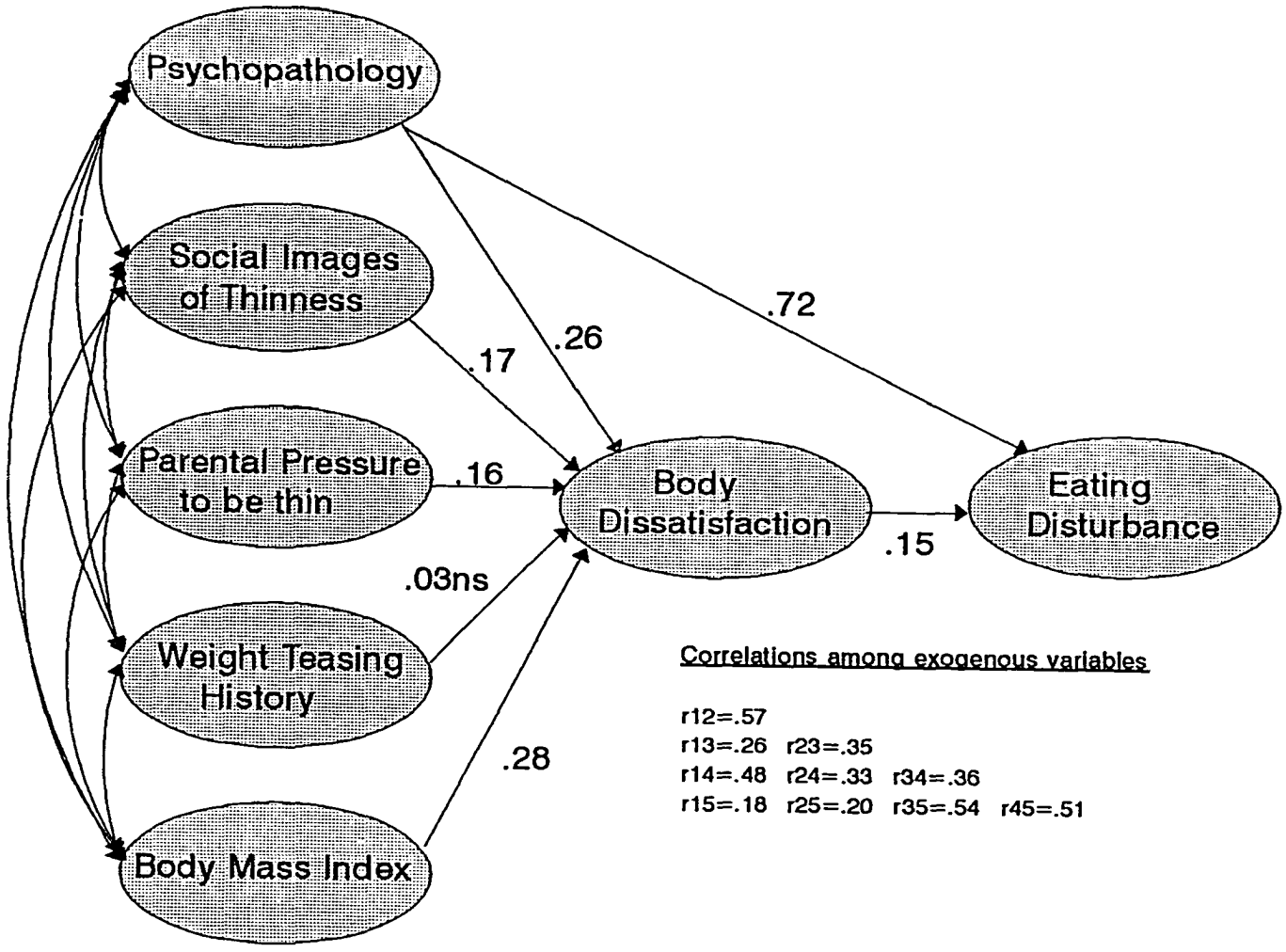

Figure 4. Revised model with path added from psychopathology to eating disturbance (Model 2)

for 40 percent of the variance in "body dissatisfaction", which itself explained 64 percent of the variance in "eating disturbance."

Although this model produced very high goodness-of-fit indices, other models could theoretically fit the data equally as well. To test this possibility, a structural model was tested in which "psychopathology" was assumed to be a consequence, rather than an antecedent, of "body dissatisfaction" and "eating disturbance." This model (Model 3) is pictured in Figure 5, and its Chi-square value and other goodness-of-fit indices are presented in Table 9. In this model, the exogenous variables accounted for 36 percent of the total variance in "body dissatisfaction." Thirty-four percent of the variance in "eating disturbance" was explained, as was 64 percent of the variance in "psychopathology." However, this model did not appear to be as well-described by the data as was Model 2.

A Chi-square difference test was conducted to determine if Model 2 (with "psychopathology" as an antecedent to "body dissatisfaction" and "eating disturbance") was statistically superior to Model 3 (with "psychopathology" as a consequence of "eating disturbance). The reduction in Chi-square (X^2 (4)=26.51; $p<.01$) was significant, suggesting that

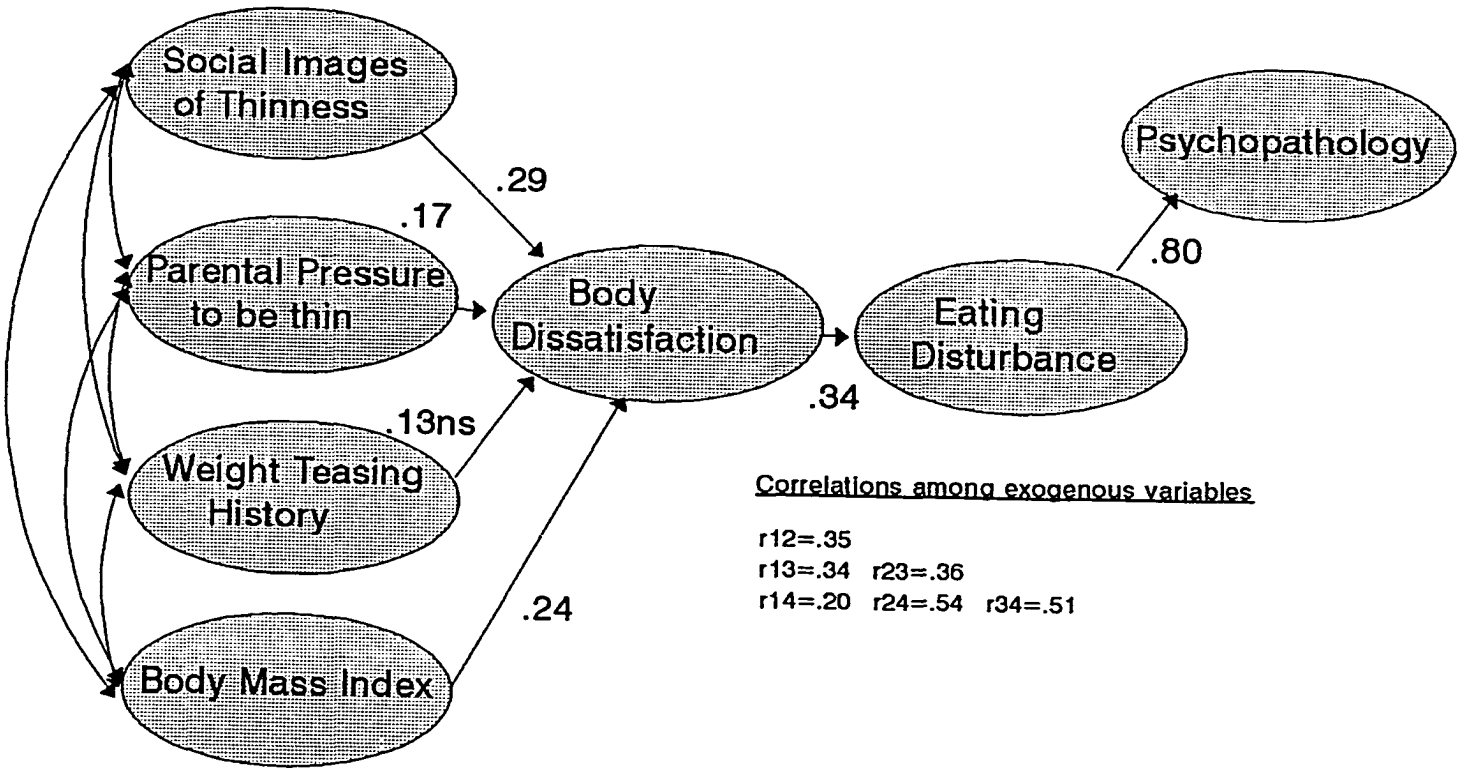

Figure 5. Model with psychopathology as a consequence of eating disturbance (Model 3)

Model 2 produced a significantly better fit with the data than Model 3. There were no modification indices produced for Model 3 which would have made a substantive improvement in fit. Therefore, it was concluded that "psychopathology" was better modeled as an antecedent to "body dissatisfaction" and "eating disturbance", rather than a consequence.

Since Model 2 appeared to produce the best fit with the data from Sample 1, it was cross-validated using the data from Sample 2. Goodness-of-fit indices (presented in Table 9) were quite high for this sample, further validating the strength of the model. Path estimates and correlations among endogenous variables for this model using the cross-validation sample are presented in Figure 6. The significance of path estimates follows the same general trend as in the initial sample, except that the path from "parental pressure for thinness" to "body dissatisfaction" was nonsignificant, as was the path from "weight teasing history" to "body dissatisfaction." This model accounted for 41 percent of the variance in "body dissatisfaction" and 67 percent of the variance in "eating disturbance" in the cross-validation sample.

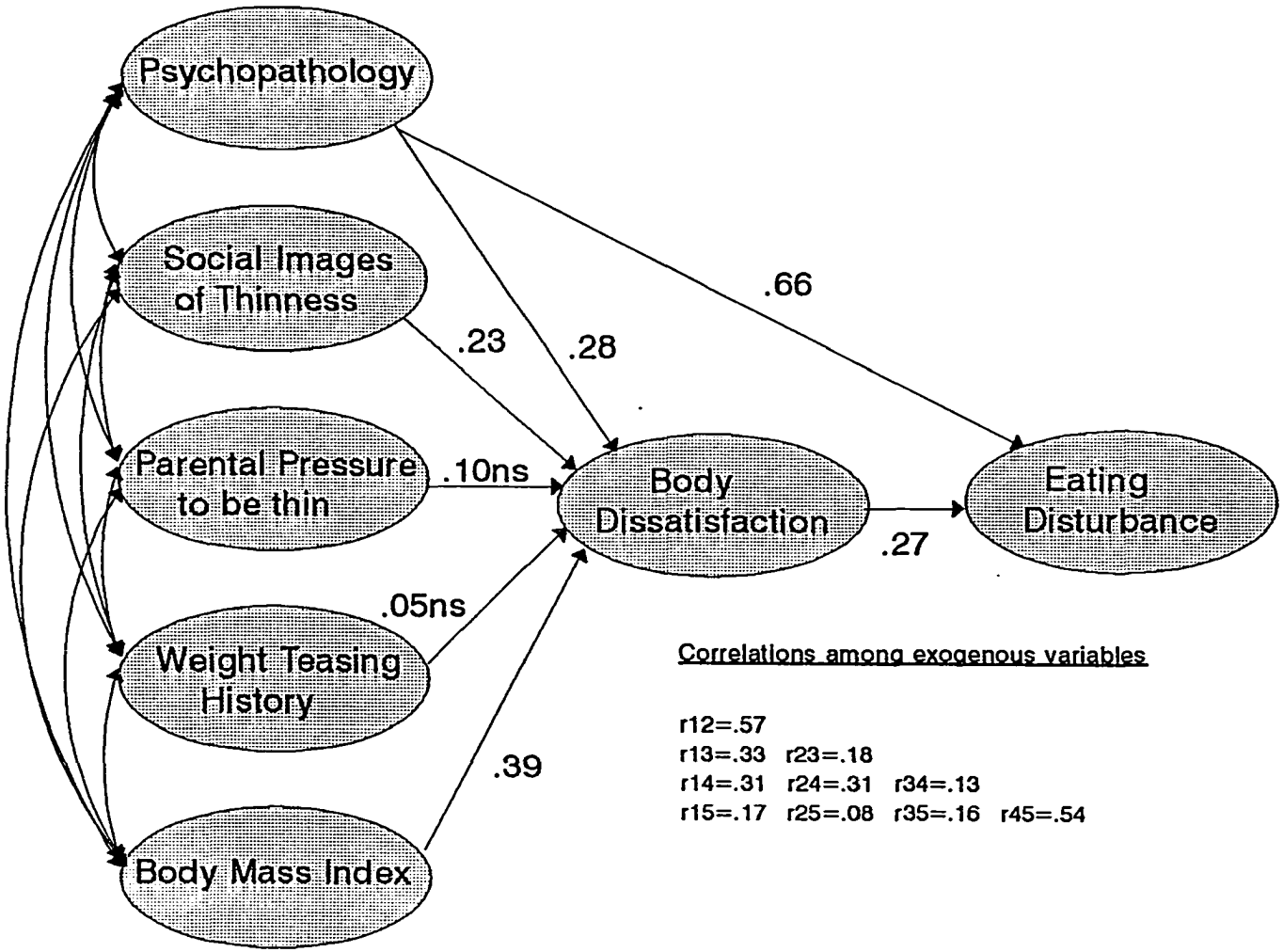

Figure 6. Model 2 tested with cross validation sample

DISCUSSION

Before a discussion of the results, it should be recognized that the generalizability of the findings in this study may be limited due to special characteristics of the subjects examined. First, participating subjects were students at two exclusive high schools, for which there are both scholastic and tuition requirements. The students sampled were primarily Caucasian and of middle to high socioeconomic status. In addition, the adolescent girls studied were slightly heavier (as evidenced by higher average body mass index) than average girls aged 14- to 17-years-old. They also appeared to exhibit slightly more psychopathology than other samples of adolescent and college-age females. In particular, they endorsed more depression, eating disturbance, and body dissatisfaction. Given these limitations, the findings of this study can be generalized only to other high school girls from middle to high socioeconomic status families. However, research has suggested that these girls may have an increased vulnerability for the development of eating disorder symptoms (e.g., Anderson & Hay, 1985); therefore, studying this group may be quite useful.

It should also be recognized that whereas the structural modeling methodology can provide support

for causal relationships, it (like any other nonexperimental paradigm) cannot prove causality. Although the structural models tested in this study appeared to be supported by the data, other models may fit the data very well. Indeed, many other variables such as obsessiveness (Hsu, Kaye, & Weltzin, 1993) and high achievement orientation (Levine and Smolak, 1992) have been hypothesized to influence the development of eating disturbance. The present study is in no way meant to be a complete representation of all potential risk factors for eating disorders.

The risk factors which were studied have been shown in other developmental psychopathology studies to be highly associated with body image and eating disturbance among females of several age groups. For example, Veron-Guidry, Williamson, & Netemeyer (1994) found that negative affect, negative evaluation of self, and social pressure for thinness predicted body dissatisfaction and eating disorder symptoms in third through seventh grade girls. Another recent study by Williamson, Netemeyer et al. (in press) examined risk factors for the development of eating disturbance in female athletes. Results indicated that social pressure for thinness, athletic performance anxiety, and negative self-evaluation were associated with eating disorder symptoms; this association was

mediated by overconcern with body shape and size. A number of confirmatory factor-analytic studies have found that psychopathological symptoms are highly associated with body dissatisfaction and eating disturbance in eating disordered subjects (Gleaves, Williamson, & Barker, 1993; Gleaves and Eberenz, 1993) and in nonclinical college females (Varnado, Williamson, & Netemeyer, 1994).

The results of the present study provide further evidence that body image dissatisfaction is a significant determinant of the development of disordered eating behaviors (i.e., restrictive dieting, binge eating, vomiting), and that body dissatisfaction mediates the relationship between eating disturbance and social and parental pressure for thinness, psychopathological symptoms (depression and low self-esteem), and actual body weight. In addition, this study found strong evidence that psychopathology is directly related to eating disorder symptoms, without the mediating influence of body dissatisfaction. The results of this study extend those of previous structural equation modeling research, in that the relationships between risk factors and eating disturbance found for children (Veron-Guidry et al., 1994) and adults (Williamson,

Netemeyer, et al., in press) have been replicated within two groups of adolescent girls.

One hypothesis in this study was that earlier-than-average menarcheal timing (prior to age 12.8 years) would be associated with higher body weight. This relationship was not supported; onset of menstruation and body mass index were correlated at low, nonsignificant levels. In fact, menarcheal timing did not appear to have a significant association with any of the other independent or dependent variables examined. This finding is consistent with the results of other research (e.g., Thompson and Psaltis, 1988) which have found little or no relationship between menarcheal timing and eating disturbance.

This study replicated previous research findings that social pressure for thinness is a strong predictor of body dissatisfaction leading to eating disturbance. These results provide further evidence that the current sociocultural emphasis on extreme thinness in women plays a primary role in producing desire to lose weight and a strong belief that one must be thin (Brownell, 1991; Levine & Smolak, 1992) which promote dieting and potentially lead to eating disordered behaviors.

Theorists have recently suggested that parental (particularly maternal) pressure for thinness is a risk factor for body image and eating disturbance (e.g., Pike and Rodin, 1991). This hypothesis received some support in the present study. A significant path estimate between parental pressure for thinness and body dissatisfaction was found in the first sample of subjects; however, the path was not significant in the cross-validation sample. Since previous research has focused primarily on pressure from one's mother to be thin, perhaps these parameters would have been stronger if ratings of maternal pressure for thinness alone had been used. However, as can be seen in Tables 6 and 7, the correlations between maternal pressure (Mother) and paternal pressure (Father) for thinness with other measures were generally of the same magnitude and significance. This pattern of correlations suggests that pressure for thinness from both mother and father may be equally important, but relatively weak variables in producing body image and eating disturbance.

A history of teasing about weight was hypothesized to be associated with body dissatisfaction and disordered eating behaviors. As would be predicted, weight teasing history was highly correlated with body mass index, indicating that as

weight increased the frequency of teasing about weight also increased. However, teasing about weight appeared to have little effect on body dissatisfaction or on the development of eating disorder symptoms. These parameter estimates were quite low within both samples, suggesting that a history of weight teasing accounted for very little of the variance in the model.

Body mass index, used as an indicator of adiposity, was significantly associated with body size dissatisfaction in both the initial and cross-validation samples. This association supports the intuitive hypothesis that body dissatisfaction increases as actual body weight increases. However, it is important to recognize that body mass index was not directly related to eating disturbance, and that the relationships between body dissatisfaction and some other exogenous variables (e.g., psychopathology) were equally as strong as that between body mass index and body dissatisfaction. These results suggest that disordered eating habits are more strongly correlated with one's attitude about one's body, rather than with actual body size.

The relationship between psychopathological symptoms and eating disturbance has been conceptualized in two different ways. One idea is

that psychological functioning is an antecedent to body image disturbance and attempts to lose weight. Therefore, girls who are lower in self-esteem and/or exhibit more depressive symptoms would be more likely to develop weight concerns (Striegel-Moore et al., 1986). An alternative view is that higher levels of psychopathology are the consequences of restrictive dieting and other attempts to control weight (Rosen et al., 1990). Longitudinal studies which have attempted to address this question have produced inconclusive results. For example, Rosen et al. (1990) found that future levels of stress, but not psychological symptoms, were predicted by dieting in adolescent girls. Poorer psychological adjustment did not predict future dieting behaviors. However, the time frame of this prospective study was only four months, which may not have been sufficient to provide support for either hypothesis. In a longitudinal study of adolescent girls by Attie and Brooks-Gunn (1989), depressive symptomatology did not contribute significantly to problem eating behaviors at Time 1, but did account for a significant amount of variance at Time 2 (two years later). These researchers hypothesized that the factors associated with eating problems in later adolescence may be independent of the factors that initiate them. High levels of body

dissatisfaction may predispose the younger adolescent to engage in behaviors to control weight; unsuccessful attempts to lose weight may then be associated with increased depressive symptoms. Striegel-Moore et al. (1989), in a longitudinal study of college females at the beginning and end of their freshman year, found that worsening of disordered eating over the year was associated with increased depression and feelings of ineffectiveness. However, the authors were unsure as to whether increased depressive symptoms preceded or followed increased levels of dieting, and suggested that the nature of this relationship merits further study.

The present study addressed the question of whether psychopathological symptoms are an antecedent or consequence of eating disturbance by comparing two different models of this relationship, with other variables in the model held constant. In the first of these models (Model 2, see Figure 4), psychopathology was viewed as an exogenous variable influencing both body dissatisfaction and eating disturbance directly. This model produced very high goodness-of-fit indices which indicated that it was described well by the data from Sample 1. This model was then compared to one in which psychopathology was viewed as an endogenous variable and as a direct consequence of eating

disturbance (Model 3, see Figure 5). Although this model also produced a good fit with the data, Model 2 (with psychopathology as an antecedent of eating disturbance) was statistically superior. Model 2 was then cross-validated with the data from Sample 2. This cross-validation analysis also produced a very good fit between model and data.

It could be suggested that the path between psychopathology and eating disturbance is a bidirectional one. However, in the LISREL program bidirectional paths assume that the variables between them are equal (i.e., equal amounts of psychopathology and eating disturbance). As this was considered theoretically unjustified, a bidirectional path between psychopathology and eating disturbance was not tested.

Although Model 2 received strong statistical support in both the original and the cross-validation analyses, the results of these analyses highlight the shortcomings of structural equation modeling in particular, and correlational research in general. These procedures, no matter how statistically sophisticated, cannot provide definitive evidence of causal relationships between variables. Using widely recognized guidelines for goodness of fit, the models tested using psychopathology as an antecedent and a

consequence of eating disturbance both produced a very good fit with the data. Therefore, the only conclusion which can be drawn is that psychopathology and eating disturbance are very highly related; the directional nature of this relationship remains unclear. Both views have conceptual integrity and have received support in the literature. Perhaps, this question can best be answered with a longitudinal prospective research paradigm which measures psychopathology and eating disturbance at several time periods over a number of years.

In sum, the results of this study replicated previous findings that negative affect, low self-esteem, social (and perhaps parental) pressure for thinness, and actual body weight are related to eating disorder symptoms, and that these relationships are mediated at least partially by body dissatisfaction. Furthermore, this study extended previous structural modeling research of body image and eating disturbance with children and adults to include adolescent girls. The results of this study point to the need to conduct longitudinal studies with samples of children and adolescents to better determine the causal relationships among the risk factors examined, particularly the association between psychopathology and eating disturbance.

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APPENDIX A

INFORMED CONSENT (PARENT)

The Department of Psychology at Louisiana State University is conducting a research project investigating eating patterns and body image in high school students. Principal investigators for the study will be Dr. Donald Williamson, a clinical psychologist and professor at LSU, and Susan Barker, a doctoral student in clinical psychology at LSU.

As a subject, your child's height and weight will be measured, and she will be asked to complete the following questionnaires:

1. Beck Depression Inventory--a 20-item questionnaire which instructs subjects to pick out sentences that describe their feelings and moods.
2. Self-Perception Profile for Adolescents--a 5-item questionnaire which assesses adolescents' perception of their general worth as a person.
3. Body Shape Questionnaire--a 34-item questionnaire that measures satisfaction or dissatisfaction with body shape and size.
4. Perception of Teasing Scale--an 11-item questionnaire which measures an individual's perception of being teased about appearance.
5. Eating Attitudes Test--a 40-item questionnaire which measures symptoms of disordered eating, such as extreme dieting or binge eating.
6. Bulimia Test-Revised--a 36-item questionnaire which measures symptoms of eating problems.
7. Sociocultural Influence on Thinness Questionnaire-a 27-item scale which measures subjects' awareness of social pressure to be thin.

Your child's body image will be assessed individually using the Body Image Assessment Procedure for adolescents. Nine body image cards are used, and on each card there is a drawing of a female silhouette whose body size ranges from very thin to very large. The cards will be shown to your child, and she will be asked to pick the card which most looks like her. The cards are then reshuffled, and the child is asked to pick the card that she would most like to look like. The entire BIA procedure generally takes less than one minute. It will take approximately one hour to complete all of the questionnaires.

No one participating in this study will be identified by name if the information appears in public. As a subject, your child has the right to ask any questions and have them answered to her

satisfaction. Your child is free to refuse to participate or withdraw from the study at any time. By marking the appropriate statement below and signing this form, you are agreeing to allow your child to participate in this study.

Please check the appropriate statement

_____ YES, my child does have permission to participate.

_____ NO, my child does not have my permission to participate.

_____

Parent/Guardian Signature Date

_____

Parent/Guardian Name (please print) Phone

_____

Child's Name/Date of Birth (please print)

_____

School/Grade

INFORMED CONSENT (STUDENT)

The Department of Psychology at Louisiana State University is conducting research investigating eating patterns and body image in high school students. Investigators for the study will be Dr. Donald Williamson, a clinical psychologist and professor at LSU; and Susan Barker, a doctoral student in clinical psychology at LSU.

As a subject, your height and weight will be measured, and you will be asked to complete the following questionnaires:

1. Beck Depression Inventory--a 20-item questionnaire which instructs subjects to pick out sentences that describe their feelings and moods for the past week.
2. Self-Perception Profile for Adolescents--a 5-item questionnaire which measures how adolescents feel about themselves as a person.
3. Body Shape Questionnaire--a 34-item questionnaire that measures satisfaction or dissatisfaction with body shape and size.
4. Perception of Teasing Scale--an 11-item questionnaire which measures whether or not the subject has been teased about her appearance.
5. Eating Attitudes Test--a 40-item questionnaire which measures symptoms of disordered eating, such as extreme dieting or binge eating.
6. Bulimia Test-Revised--a 36-item questionnaire which measures eating problems.
7. Sociocultural Influence on Thinness Questionnaire-a 27-item scale which measures how aware subjects are of social pressure to be thin.

Your body image will be measured individually using the Body Image Assessment (BIA) procedure. Nine body image cards are used, and on each card there is a drawing of a female body whose size ranges from very thin to very large. The cards will be shown to you, and you will be asked to pick the card which most looks like you. The cards are then reshuffled, and you will be asked to pick the card that you would most like to look like. The entire BIA procedure takes less than one minute. It will take about one class period to complete all of the questionnaires.

No one participating in this study will be identified by name if the information appears in public. As a subject, you have the right to ask any questions and have them answered to your satisfaction.

You are free to refuse to participate or withdraw from the study at any time. By signing this form, you are agreeing to participate in this study.

_____ _____

Signature Date

_____

Name/Date of Birth (please print)

_____

School/Grade

APPENDIX B

BODY SHAPE QUESTIONNAIRE

We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	ALWAYS
1. Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2. Have you been so worried about your shape that you have been feeling that you ought to diet?	1	2	3	4	5	6
3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?	1	2	3	4	5	6
4. Have you been afraid that you might become fat (or fatter)?	1	2	3	4	5	6
5. Have you worried about your flesh not being firm enough?	1	2	3	4	5	6
6. Has feeling full (e.g., after eating a large meal) made you feel fat?	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6

8.	Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
9.	Has being with thin women made you feel self-conscious about your shape?	1	2	3	4	5	6
10.	Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6
11.	Has eating even a small amount of food made you feel fat?	1	2	3	4	5	6
12.	Have you noticed the shape of other women and felt that your own shape compared unfavorably?	1	2	3	4	5	6
13.	Has thinking about your shape interfered with your ability to concentrate (e.g., while watching TV, reading, listening to conversations?	1	2	3	4	5	6
14.	Has being naked, such as when taking a bath, made you feel fat?	1	2	3	4	5	6
15.	Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6
16.	Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
17.	Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18.	Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?	1	2	3	4	5	6

19.	Have you felt excessively large and rounded?	1	2	3	4	5	6
20.	Have you felt ashamed of your body?	1	2	3	4	5	6
21.	Has worry about your shape made you diet?	1	2	3	4	5	6
22.	Have you felt happiest about your shape when your stomach has been empty (e.g., in the morning)?	1	2	3	4	5	6
23.	Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
24.	Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
25.	Have you felt that it is not fair that other women are thinner than you?	1	2	3	4	5	6
26.	Have you vomited in order to feel thinner?	1	2	3	4	5	6
27.	When in company have you worried about taking up too much room (e.g., sitting on a sofa or bus seat)?	1	2	3	4	5	6
28.	Have you worried about your flesh being dimply?	1	2	3	4	5	6
29.	Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?	1	2	3	4	5	6
30.	Have you pinched areas of your body to see how much fat there is?	1	2	3	4	5	6

31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming pools)?	1	2	3	4	5	6
32. Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6

APPENDIX C

BECK DEPRESSION INVENTORY

On this questionnaire there are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY! Circle the number beside the statements you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and I can't snap out of it.
   3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don't enjoy things the way I used to.
   2 I don't get real satisfaction out of anything any more.
   3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don't feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7.	0	I don't feel disappointed in myself.
	1	I am disappointed in myself.
	2	I am disgusted with myself.
	3	I hate myself.
8.	0	I don't feel I am any worse than anybody else.
	1	I am critical of myself for my weaknesses or mistakes.
	2	I blame myself all the time for my faults.
	3	I blame myself for everything bad that happens.
9.	0	I don't have any thoughts of killing myself.
	1	I have thoughts of killing myself, but I would not carry them out.
	2	I would like to kill myself.
	3	I would kill myself if I had the chance.
10.	0	I don't cry anymore than usual.
	1	I cry more now than I used to.
	2	I cry all the time now.
	3	I used to be able to cry, but now I can't cry even though I want to.
11.	0	I am no more irritated now than I ever am.
	1	I get annoyed or irritated more easily than I used to.
	2	I feel irritated all the time now.
	3	I don't get irritated at all by the things that used to irritate me.
12.	0	I have not lost interest in other people.
	1	I am less interested in other people than I used to be.
	2	I have lost most of my interest in other people.
	3	I have lost all of my interest in other people.
13.	0	I make decisions about as well as I ever could.
	1	I put off making decisions more than I used to.
	2	I have greater difficulty in making decisions than before.
	3	I can't make decisions at all anymore.

14. 0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

15. 0 I can work as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16. 0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

18. 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19. 0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. Yes _____ No _____

20. 0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think about anything else.

APPENDIX D

SELF-PERCEPTION SCALE FOR ADOLESCENTS
GLOBAL SELF-WORTH FACTOR

Sample Sentence:	Really True for Me	Sort of True for Me
Some teenagers like to go to movies in their spare time BUT Other teenagers like to go to sports events.	_____ _____	_____ _____
Some teenagers are often disappointed in themselves BUT Other teenagers are pretty pleased with themselves.	_____ _____	_____ _____
Some teenagers don't like the way they are leading their life BUT Other teenagers do like the way they are leading their life.	_____ _____	_____ _____
Some teenagers are happy with themselves most of the time BUT Other teenagers are often not happy with themselves.	_____ _____	_____ _____
Some teenagers like the kind of person they are BUT Other teenagers often wish they were someone else.	_____ _____	_____ _____
Some teenagers are very happy being the way they are BUT Other teenagers wish they were different.	_____ _____	_____ _____

APPENDIX E

PERCEPTION OF TEASING SCALE

The following questions should be answered with respect to the period of time when you were growing up (from age 5 until now).

First, rate how often you think you have been the object of such behavior (using the scale provided, never to very often).

Second, unless you responded never to a particular question, rate how upset you were by the teasing (not upset to very upset).

1. People made fun of you because you were heavy.

Never		Sometimes		Very Often
1	2	3	4	5

1a. How upset were you?

Not upset		Somewhat Upset		Very Upset
1	2	3	4	5

2. People made jokes about you being too heavy.

Never		Sometimes		Very Often
1	2	3	4	5

2a. How upset were you?

Not Upset		Somewhat Upset		Very Upset
1	2	3	4	5

3. People laughed at you for trying out for sports because you were heavy.

Never		Sometimes		Very Often
1	2	3	4	5

3a. How upset were you?

Not Upset		Somewhat Upset		Very Upset
1	2	3	4	5

4. People called you names like "fatso."

Never		Sometimes		Very Often
1	2	3	4	5

4a. How upset were you?

Not Upset		Somewhat Upset		Very Upset
1	2	3	4	5

5. People pointed at you because you were overweight.

Never		Sometimes		Very Often
1	2	3	4	5

5a. How upset were you?

Not Upset		Somewhat Upset		Very Upset
1	2	3	4	5

6. People snickered about your heaviness when you walked into a room alone.

Never		Sometimes		Very Often
1	2	3	4	5

6a. How upset were you?

Not Upset		Somewhat Upset		Very Upset
1	2	3	4	5

APPENDIX F

VANITY SCALE SOCIAL/MEDIA INFLUENCES FACTOR

For each of the following statements, please circle the number that most closely reflects the degree to which the opinion or behavior expressed in the statement is true of your own opinions and behaviors.

1. The way I look is extremely important to me.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

2. I am very concerned about my appearance.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

3. I would feel embarrassed if I was around people and did not look my best.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

4. Looking my best is worth the effort.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

5. It is important that I always look good.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

6. People notice how attractive I am.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

7. My looks are very appealing to others.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

8. People are envious of my good looks.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

9. I am a very good-looking individual.
   1 2 3 4 5 6 7
   Strongly Disagree Strongly Agree

10. I have the type of body that people want to look at.
    1 2 3 4 5 6 7
    Strongly Disagree Strongly Agree

11. My body is appealing to others.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

12. Most people think that girls should have a thin body.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

13. Thin girls get treated better than girls who are heavy.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

14. People are nicer to girls who are thin.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

15. Most people expect girls to be thin.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

16. Commercials, TV shows, and magazines favor girls with thin bodies.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

17. I would like to look like the models shown in fashion magazines and commercials.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

18. Most people think that girls should be attractive.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

19. Pretty girls get treated better than ugly girls.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

20. People are nicer to pretty girls.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

21. Most people expect girls to be pretty.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

22. Commercials, TV shows, and magazines favor girls who are pretty.
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

23. When I see girls in clothing commercials, I compare myself to them.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

24. I compare myself to the models in fashion magazines.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

25. When I buy clothes, I look at magazines to give me ideas about how I should look.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

26. When I look at models in commercials, it makes me feel sad about how I look.

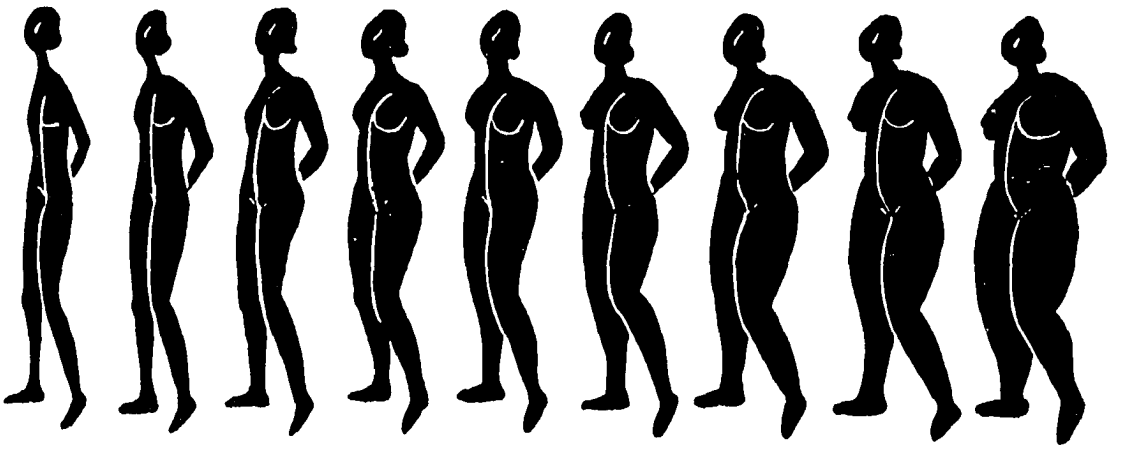
1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

27. I wish I looked more like the models shown in fashion magazines.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

APPENDIX G

BODY IMAGE ASSESSMENT PROCEDURE SILHOUETTES



APPENDIX H

EATING ATTITUDES TEST

Please circle the response which best applies to each of the numbered statements. Please answer each question carefully.

ALWAYS	VERY OFTEN	OFTEN	SOMETIMES	RARELY	NEVER	
0	1	2	3	4	5	1. Like eating with other people.
0	1	2	3	4	5	2. Prepare foods for others but do not eat what I cook.
0	1	2	3	4	5	3. Become anxious prior to eating.
0	1	2	3	4	5	4. Am terrified about being overweight.
0	1	2	3	4	5	5. Avoid eating when I am hungry.
0	1	2	3	4	5	6. Find myself preoccupied with food.
0	1	2	3	4	5	7. Have gone on eating binges where I feel that I may not be able to stop.
0	1	2	3	4	5	8. Cut my food into small pieces.
0	1	2	3	4	5	9. Am aware of the calorie content of foods I eat.
0	1	2	3	4	5	10. Particularly avoid foods with a high carbohydrate content (e.g., bread, potatoes, rice).
0	1	2	3	4	5	11. Feel bloated after meals.
0	1	2	3	4	5	12. Feel that others would prefer if I ate more.
0	1	2	3	4	5	13. Vomit after I have eaten.
0	1	2	3	4	5	14. Feel extremely guilty after eating.
0	1	2	3	4	5	15. Am preoccupied with a desire to be thinner.

0	1	2	3	4	5	16. Exercise strenuously to burn off calories.
0	1	2	3	4	5	17. Weigh myself several times a day.
0	1	2	3	4	5	18. Like my clothes to fit tightly.
0	1	2	3	4	5	19. Enjoy eating meat.
0	1	2	3	4	5	20. Wake up early in the morning.
0	1	2	3	4	5	21. Eat the same foods day after day.
0	1	2	3	4	5	22. Think about burning up calories when I exercise.
0	1	2	3	4	5	23. Have regular menstrual periods.
0	1	2	3	4	5	24. Other people think I am too thin.
0	1	2	3	4	5	25. Am preoccupied with the thought of having fat on my body.
0	1	2	3	4	5	26. Take longer than others to eat my meals.
0	1	2	3	4	5	27. Enjoy eating at restaurants.
0	1	2	3	4	5	28. Take laxatives.
0	1	2	3	4	5	29. Avoid foods with sugar in them.
0	1	2	3	4	5	30. Eat diet foods.
0	1	2	3	4	5	31. Feel that food controls my life.
0	1	2	3	4	5	32. Display self-control around food.
0	1	2	3	4	5	33. Feel that others pressure me to eat.
0	1	2	3	4	5	34. Give too much time and thought to food.
0	1	2	3	4	5	35. Suffer from constipation.
0	1	2	3	4	5	36. Feel uncomfortable after eating sweets.
0	1	2	3	4	5	37. Engage in dieting behavior.
0	1	2	3	4	5	38. Like my stomach to be empty.
0	1	2	3	4	5	39. Enjoy trying new rich foods.
0	1	2	3	4	5	40. Have the impulse to vomit after meals.

APPENDIX I

BULIMIA TEST-REVISED

Answer each question on the following pages by checking the appropriate number under each question. Please respond to each item as honestly as possible; remember, all of the information you provide will be kept strictly confidential.

1. I am satisfied with my eating patterns.
   1. agree
   2. neutral
   3. disagree a little
   4. disagree
   5. disagree strongly

2. Would you presently call yourself a "binge eater?"
   1. yes, absolutely
   2. yes
   3. yes, probably
   4. yes, possible
   5. no, probably not

3. Do you feel you have control over the amount of food you consume?
   1. most or all of the time
   2. a lot of the time
   3. occasionally
   4. rarely
   5. never

4. I am satisfied with the shape and size of my body.
   1. frequently or always
   2. sometimes
   3. occasionally
   4. rarely
   5. seldom or never

5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. never or my eating behavior is never out of control

6. I use laxatives or suppositories to help control my weight
   1. once a day or more
   2. 3-6 times a week
   3. once or twice a week
   4. 2-3 times a month
   5. once a month or less (or never)

7. I am obsessed about the size of my body
   1. always
   2. almost always
   3. frequently
   4. sometimes
   5. seldom or never

8. There are times when I rapidly eat a very large amount of food
   1. more than twice a week
   2. twice a week
   3. once a week
   4. 2-3 times a month
   5. once a month or less (or never)

9. How long have you been binge eating (eating uncontrollably to the point of stuffing yourself)?
   1. not applicable; I don't binge eat
   2. less than 3 months
   3. 3 months - 1 year
   4. 1 - 3 years
   5. 3 or more years

10. Most people I know would be amazed if they knew how much food I can consume at one sitting
   1. without a doubt
   2. very probably
   3. probably
   4. possibly
   5. no

11. I exercise in order to burn calories
   1. more than 2 hours per day
   2. about 2 hours per day
   3. more than 1 but less than two hours per day
   4. one hour or less per day
   5. I exercise but not to burn calories or I don't exercise

12. Compared with women your age, how preoccupied are you about your weight and body shape?
    1. a great deal more than average
    2. much more than average
    3. more than average
    4. a little more than average
    5. average or less than average

13. I am afraid to eat anything for fear that I won't be able to stop
    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

14. I feel tormented by the idea that I am fat or might gain weight
    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

15. How often do you intentionally vomit after eating?
    1. 2 or more times per week
    2. once a week
    3. 2-3 times a month
    4. once a month
    5. less than once a month or never

16. I eat a lot of food when I'm not even hungry
    1. very frequently
    2. frequently
    3. occasionally
    4. sometimes
    5. seldom or never

17. My eating patterns are different from the eating patterns of most people
    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics)
    1. never or I don't binge eat
    2. rarely
    3. occasionally
    4. a lot of the time
    5. most or all of the time

19. I have tried to lose weight by fasting or going on strict diets
    1. not in the past year
    2. once in the past year
    3. 2-3 times in the past year
    4. 4-5 times in the past year
    5. more than 5 times in the past year

20. I exercise vigorously and for long periods of time in order to burn calories
    1. average or less than average
    2. a little more than average
    3. more than average
    4. much more than average
    5. a great deal more than average

21. When engaged in an eating binge, I tend to eat foods that are high in carbodydrates (sweets and starches)
    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom, or I don't binge

22. Compared to most people, my ability to control my eating behavior seems to be
    1. greater than others' ability
    2. about the same
    3. less
    4. much less
    5. I have absolutely no control

23. I would presently label myself a "compulsive eater" (one who engages in episodes of uncontrolled eating)
    1. absolutely
    2. yes
    3. yes, probably
    4. yes, possibly
    5. no, probably not

24. I hate the way my body looks after I eat too much
    1. seldom or never
    2. sometimes
    3. frequently
    4. almost always
    5. most or all of the time

25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics
    1. never
    2. rarely
    3. occasionally
    4. a lot of the time
    5. most or all of the time

26. Do you believe that it is easier for you to vomit than it is for most people?
    1. yes, it's no problem at all for me
    2. yes, it's easier
    3. yes, it's a little easier
    4. about the same
    5. no, it's less easy

27. I use diuretics (water pills) to help control my weight
    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

28. I feel that food controls my life
    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

29. I try to control my weight by eating little or no food for a day or longer
    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

30. When consuming a large quantity of food, at what rate of speed do you usually eat?
    1. more rapidly than most people have ever eaten in their lives
    2. a lot more rapidly than most people
    3. a little more rapidly than most people
    4. about the same rate as most people
    5. more slowly than most people (or not applicable)

31. I use laxatives or suppositories to help control my weight
    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

32. Right after I binge eat I feel
    1. so fat and bloated I can't stand it
    2. extremely fat
    3. fat
    4. a little fat
    5. OK about how my body looks or I never binge

33. Compared to other people of my sex, my ability to always feel in control of how much I eat is
    1. about the same or greater
    2. a little less
    3. less
    4. much less
    5. a great deal less

34. In the past 3 months, on the average how often did you binge eat (eat uncontrollably to the point of stuffing yourself)?
    1. once a month or less (or never)
    2. 2-3 times a month
    3. once a week
    4. twice a week
    5. more than twice a week

35. Most people I know would be surprised at how fat I look after I eat a lot of food
    1. yes, definitely
    2. yes
    3. yes, probably
    4. yes, possibly
    5. no, probably not or I never eat a lot of food

36. I use diuretics (water pills) to help control my weight
    1. 3 times a week or more
    2. once or twice a week
    3. 2-3 times a month
    4. once a month
    5. never

APPENDIX J

SUBJECT QUESTIONNAIRE

1. Have you started menstruating (circle one)?
YES NO

If yes, at what age (in years and months) did you have your first menstrual period?

_____ years, _____ months

2. Please indicate on the following scale **how concerned you are with your body shape and weight:**

1	2	3	4	5	6	7
Not concerned at all						Extremely concerned

3. Please indicate on the following scale **how much pressure you feel from your mother to be thin:**

1	2	3	4	5	6	7
No pressure at all						Extreme pressure

4. Please indicate on the following scale **how much pressure you feel from your father to be thin:**

1	2	3	4	5	6	7
No pressure at all						Extreme pressure

APPENDIX K

SUBJECT DATA FORM

ID# _____ INITIALS _____ AGE _____

RACE (CIRCLE ONE):
0 = WHITE
1 = BLACK
2 = OTHER

GRADE (CIRCLE ONE):
9 10 11 12

WEIGHT (IN POUNDS): _____

HEIGHT (IN INCHES): _____

BODY IMAGE ASSESSMENT:
CURRENT _____
IDEAL _____

AGE OF FIRST PERIOD: _____ YEARS _____ MONTHS

CONCERN WITH SHAPE/WEIGHT: _____

PRESSURE FROM MOTHER: _____

PRESSURE FROM FATHER: _____

SELF-PERCEPTION SCALE FOR ADOLESCENTS (SPPA):
GLOBAL SELF-WORTH SCALE _____

BODY SHAPE QUESTIONNAIRE (BSQ): _____

EATING ATTITUDES TEST (EAT): _____

BULIMIA TEST-REVISED (BULIT-R): _____

BECK DEPRESSION INVENTORY (BDI): _____

PERCEPTION OF TEASING SCALE (POTS):
WEIGHT FREQUENCY SCORE: _____
WEIGHT EFFECT SCORE: _____

SOCIOCULTURAL PRESSURE FOR
THINNESS QUESTIONNAIRE: _____

CONSENT FORM RECEIVED? YES NO

VITA

Susan Elizabeth Barker was born December 21, 1965 Baton Rouge, Louisiana. She attended Louisiana State University, where she graduated in 1987 with a Bachelor of Science degree in psychology. Susan earned her Master of Arts degree in psychology from Louisiana State University in 1991. She is currently a candidate for the Doctor of Philosophy degree in clinical psychology at Louisiana State University, and anticipates graduating in December, 1994.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Susan Elizabeth Barker

Major Field: Psychology

Title of Dissertation: Structural Equation Modeling Analysis of Risk Factors for the Development of Eating Disorder Symptoms in Adolescents

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

October 26, 1994